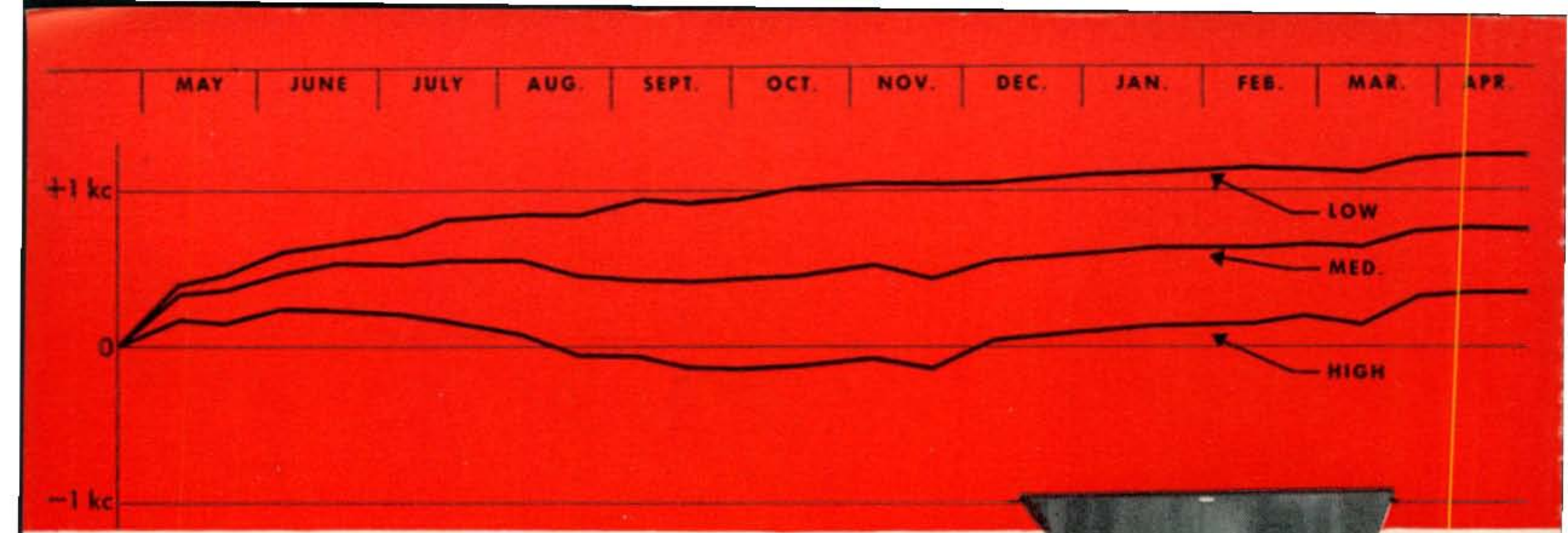
SEPTEMBER
1957
50¢

CQ

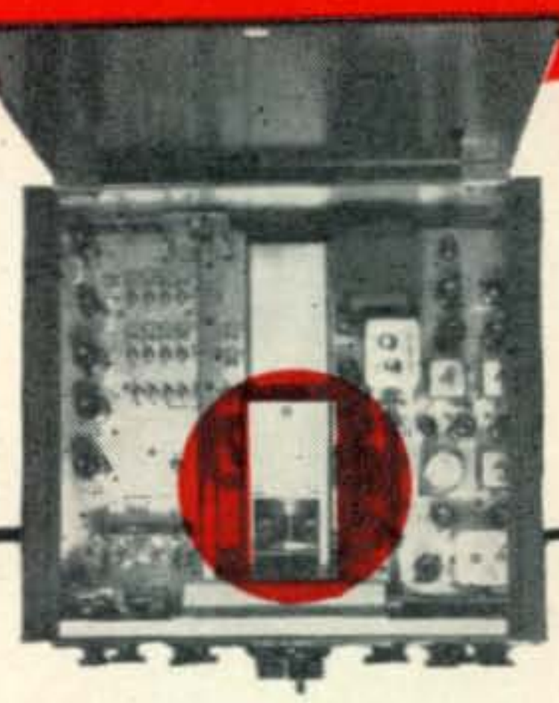
RADIO AMATEURS' JOURNAL

WN2SLA operates portable using C-D Sportsman for power



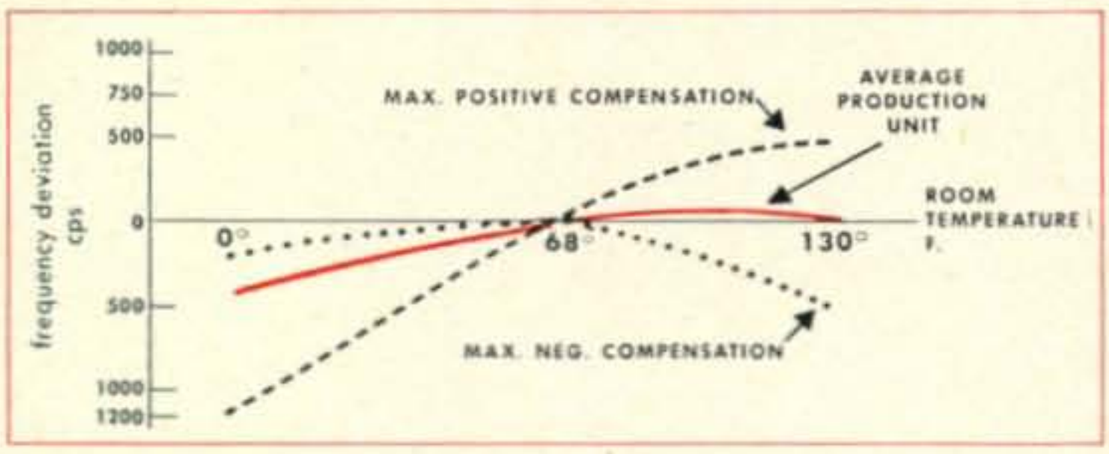
UNSURPASSED STABILITY

75A-4



Exceptional frequency stability is another reason why Collins amateur equipment sets performance standards. To develop oscillators capable of maintaining frequency stability over a long period of time, Collins constantly carries on oscillator aging tests. In these tests, groups of oscillators produced with different materials and techniques are operated over one and two year periods. The frequency drift of the high, middle and low frequencies is charted on an aging curve. The aging curve shown above charts the performance of a particular group of oscillators which showed superior long-range stability. Note the end point spread in the curve (1.955—2.955) is less than 1 kc. In other words, after continuous operation for one year, the frequency difference between the high and low ends was only 900 cycles. Oscillators with the changes indicated necessary by these tests were incorporated and are one reason why you get outstanding year-to-year frequency stability in Collins amateur equipment.

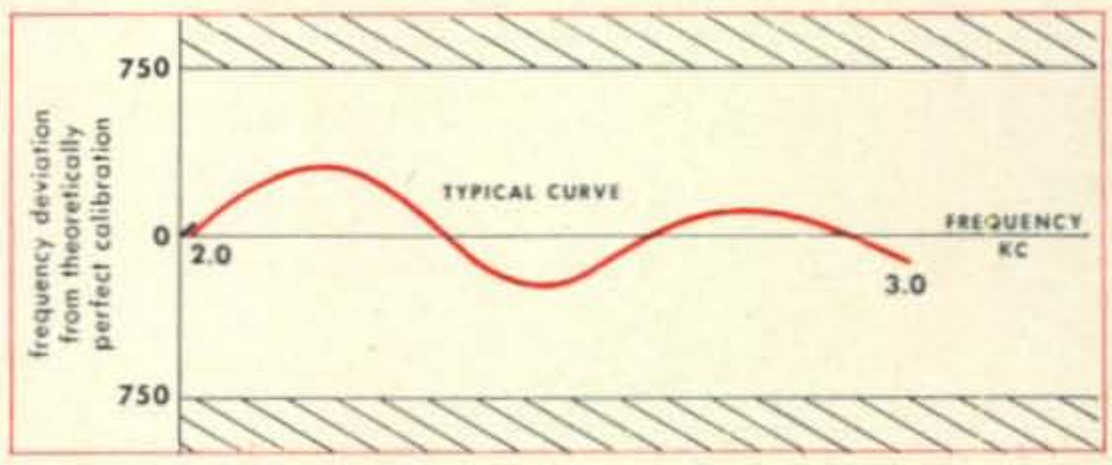
Temperature stability



To produce the minimum effect of temperature variation on frequency stability, each PTO on a Collins equipment is individually temperature compensated. In final testing, the PTO is placed in a temperature controlled chamber. The correct compensation is selected to bring it within the 750 cps (hot) and 1200 cps (cold) limits as shown on the curve.

Calibration accuracy

When the PTO dial in your Collins KWS-1, 75A-4, or KWM-1 indicates a frequency, you are closer than anyone else with a VFO. Production limits of 750 cycles, and actual figures much better (see curve), give you the best frequency calibration available, other than a crystal. Frequency deviation is also limited to 250 cycles per 50 kc of frequency change to eliminate any sudden variation within the band.



Vibration

An outstanding characteristic of Collins KWM-1 mobile transceiver is its amazing frequency stability despite vibration. (The oscillator in the KWM-1, though smaller and of different construction, has the frequency stability of the 75A-4 oscillator.) A vibration table oscillating at 60 cps in 2 g shocks varies the frequency less than 75 cycles. An automobile traveling over washboard roads produces considerably less than this.

The 75A-4 will take a shock of 5 g's — approximately the same as dropping it six inches onto a very solid surface — with less than 50 cycles of frequency shift.

The 75A-4 was not intended to be a frequency standard, but where else can you get the features of 1 uv sensitivity, Mechanical Filter selectivity, precise dial calibration, and rock-like stability?

See your Collins distributor for the finest in amateur equipment — the 75A-4, KWS-1, and KWM-1.

For further information, check number 1 on page 126.

Collins CREATIVE LEADER IN COMMUNICATION COLLINS

There's a PR for every Service!

AMATEUR

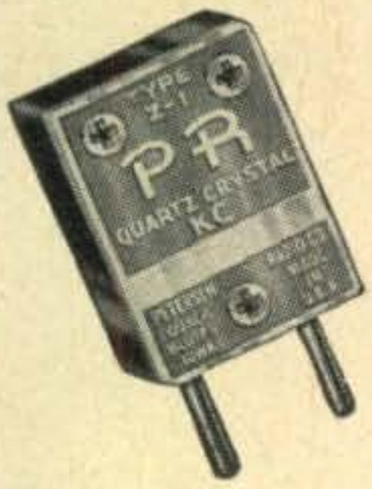
40, 80 and 160 Meters, PR Type Z-2

Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed.....**$2.95 Net**

20 Meters, PR Type Z-3

Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. Stable as fundamental oscillators. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation.....**$3.95 Net**

COMMERCIAL



COMMERCIAL, PR Type Z-1

Designed for rigors of all types of commercial service. Calibrated .005 per cent of specified frequency. Weight less than ¾ ounce. Sealed against moisture and contamination. Meets FCC requirements for all types of service.

SPECIAL TYPES

Type Z-1, AIRCRAFT

3023.5 Kc., .005%.....**$3.45** Net

Type Z-1, MARS and CAP

Official assigned transmitter frequencies in the range.
Calibrated to .005%. 1500 to 10000 Kc. **$3.45** Net

Type Z-6A FREQUENCY STANDARD

To determine band-edge. To keep the VFO and receiver properly calibrated.

100 Kc. . . . . **$6.95** Net

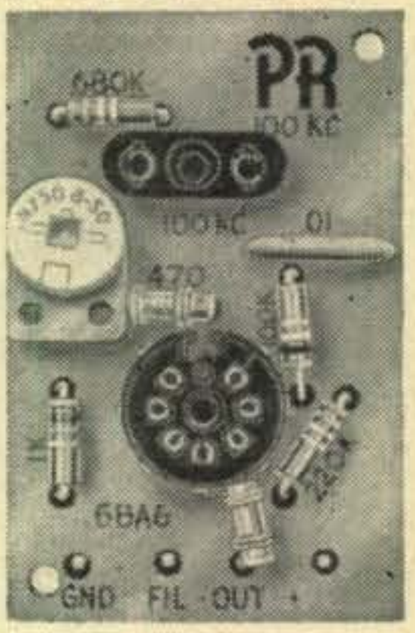
PR PRINTED OSCILLATOR KIT

Has many uses—

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
- As Foundation Circuit for Low Frequency SSB Crystals

Assembled in minutes. Kit contains everything but 6BA6 oscillator tube and crystal.

Each . . . . . **$4.50** Net

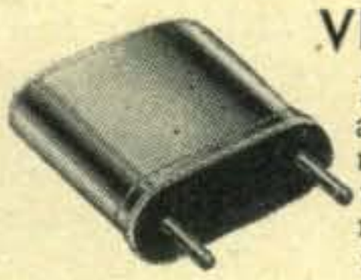


Type 2XP

Suitable for converters, experimental, etc. Same holder dimensions as Type Z-2.

1600 to 12000 Kc. (Fund.) ±5 Kc. . . . **$3.45** Net

12001 to 25000 Kc. (3d Mode) ±10 Kc. . . . **$4.45** Net



VHF Type Z-9R

For Lear, Narco and similar equipment operating in the 121 Mc. region, requiring crystals in 30 Mc. range.

Each . . . . . **$4.95** Net

Type Z-9A RADIO CONTROLLED OBJECTS

27.255 Mc., .04% . . . **$3.95** Net

Type Z-1 TV Marker Crystals

Channels 2 through 13 . . . . . **$6.45** Net
3100 Kc. . **$2.95** Net
4100 Kc. . **$2.95** Net
4.5 Mc. Intercarrier, .01% . . . **2.95** Net
5.0 Mc. Sig. Generator, .01% **2.95** Net
10.7 Mc. FM, IF, .01% . . . **2.95** Net

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CQ, the Radio Amateurs' Journal is published for active hams by active hams. Not affiliated with any clubs or other political groups, CQ endeavors to be a true and honest reporter for those interested in the hobby. Suggestions for improvement are welcomed. Our address is:

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New York 36, New York

Authors would do well to send for the CQ Style sheet which will explain our confused system of abbreviations and symbols. The article "Author Author" (October 1952 CQ) tells all about how to write articles for CQ, how much we pay, etc. Reprints of this article are available from CQ if you have been improvident in keeping up your radio library.

CQ Certificates:

The WPX Award is granted for two-way contact with certain number of amateurs in different prefixes of the world. Full details are contained in the WPX Record Book which is available for 15c from CQ. Application forms are free.

The WAZ Award is granted for contacting all of the amateur zones of the world. Current standings of amateurs working for this award will be found in the DX column. A DX Zone map of the world is available free from CQ. Send stamped envelope.

Technical Information:

CQ has no one available to answer technical questions. Please check the 11-year cumulative index which was published in the January 1956 CQ for information about articles in past issues of CQ. The December 1956 CQ yearly index will bring you up to 1957. Most back issues are available at 50c each from us, check our "Back Issue" ad for details on those not available. Reprints of the Cumulative Index are available free.

Disclaimer:

The authors and editors do the best they can to make everything as correct as possible in the articles. If for any reason any of them should happen to goof we hasten to point out that everything is experimental and we guarantee nothing.

Our Cover:

Aside from being pretty, WN2SLA did the illustration on page 27. Look for more of her work on the upcoming Annual November Cover as well as illustrations within CQ in the future.

CQ, The Radio Amateurs' Journal

September 1957
Vol. 13, No. 9

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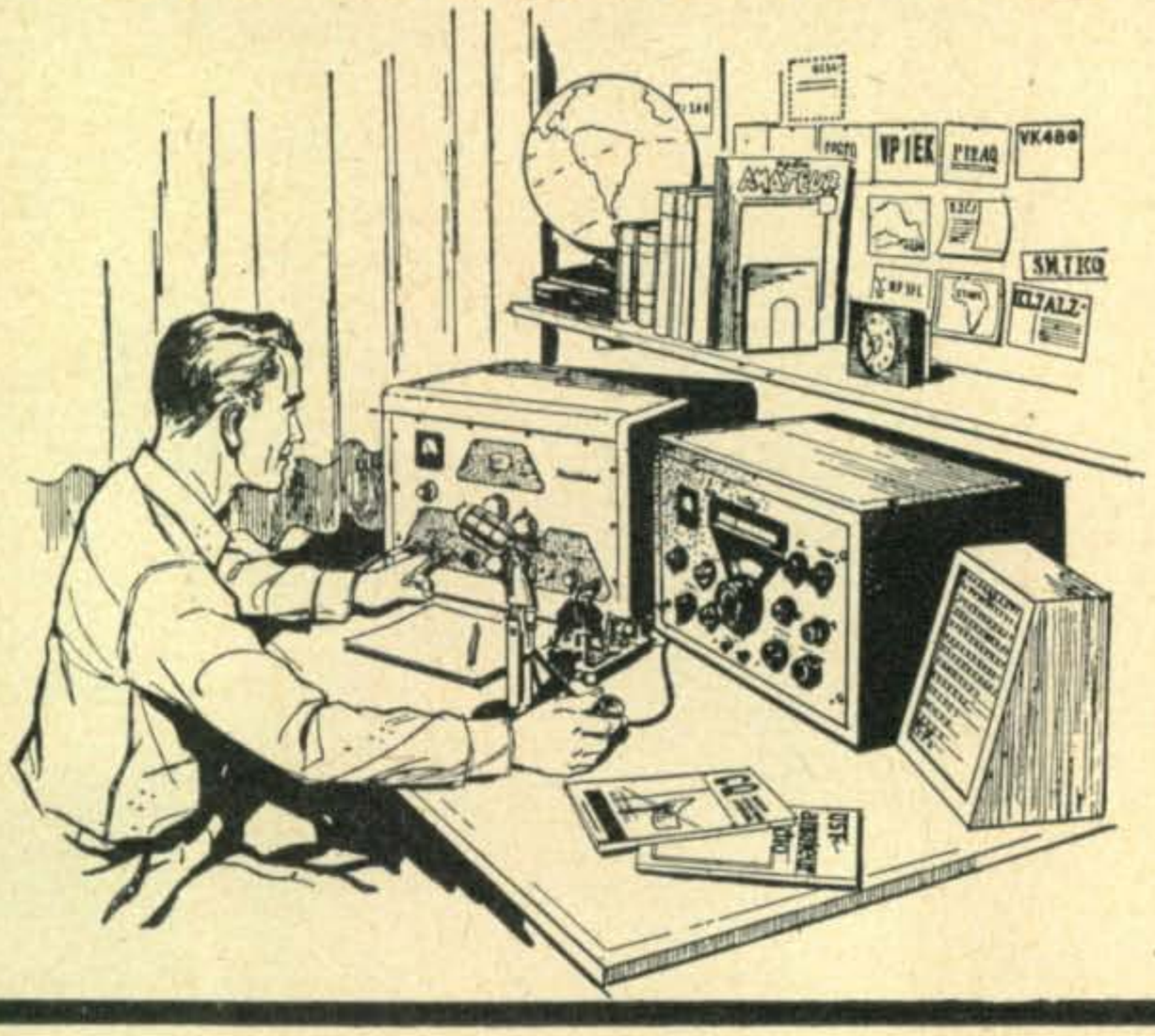
HEATHKITS®



The world's finest ham equipment in kit form . . . designed especially to meet your requirements!

Heath amateur radio gear is designed *by* hams—*for* hams, to insure maximum "on the air" enjoyment. Good design and top-quality components guarantee reliability. Heathkits are easy to build and are easy on your budget! You save by dealing direct, and you may use the Heath Time Payment Plan on orders totaling $90.00 or more. Write for complete details.

HEATHKIT DX-100 TRANSMITTER KIT

PHONE AND CW

- *Phone or CW—160 through 10 meters.*
- *100 watts RF on phone—120 watts CW —parallel 6146 final.*
- *Built-in VFO—pi network output circuit.*
- *Easy to build—TVI suppressed*

MODEL DX-100

$189.50

$18.95 dwn., $15.92 mo.

Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified. $50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.

HEATH COMPANY BENTON HARBOR 12, MICHIGAN

A Subsidiary of Daystrom, Inc.

For further information, check number 5 on page 126.

HEATHKIT DX-35
TRANSMITTER KIT

PHONE AND CW

MODEL DX-35

$56.95

Shpg. Wt. 24 Lbs.

$5.70 dwn., $4.78 mo.

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulater and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulater. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.

- *Phone or CW—80 through 10 meters.*
- *65 watts CW—50 watts peak on phone—6146 final amplifier.*
- *Pi network output to match various antenna impedances.*
- *Tremendous dollar value—easy to build.*

BRAND NEW

HEATHKIT DX-20
CW TRANSMITTER KIT

MODEL DX-20

$35.95

$3.60 dwn., $3.02 mo.

Shpg. Wt. 18 Lbs.

- *Designed exclusively for CW work.*
- *50 watts plate power input—80 through 10 meters.*
- *Pi network output circuit to match various antenna impedances.*
- *Attractive and functional styling—easy to build.*

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!

HEATH COMPANY BENTON HARBOR 12, MICHIGAN

A Subsidiary of Daystrom, Inc.

For further information, check number 6 on page 126.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT

This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer-type power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—headphone jack—and AGC. Has built-in BFO for CW reception. Shpg. Wt. 12 Lbs.

MODEL AR-3

$29.95

incl. excise tax (less cabinet)

$3.00 dwn., $2.52 mo.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. $.50 dwn., $.42 mo. **$4.95**

Ⓐ HEATHKIT VFO KIT MODEL VF-1

Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. $1.95 dwn., $1.64 mo. **$19.50**

Ⓑ HEATHKIT GRID DIP METER KIT MODEL GD-1B

Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. $2.00 dwn., $1.68 mo. **$19.95**

Ⓒ HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. $1.45 dwn., $1.22 mo. **$14.50**

Ⓓ HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC at 300 ma (or 12.6 vac at 150 ma), and 150 to 250 vdc at 2 ma. Simple to connect with cable and plugs supplied. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. $1.00 dwn., $.84 mo. **$9.95**

HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling $90.00 or more.

HEATH COMPANY BENTON HARBOR 12, MICHIGAN

A Subsidiary of Daystrom, Inc.

For further information, check number 7 on page 126.

Feenix, Ariz.

Deer Hon Ed:

Boy oh boys, have that car of mine been getting the Hon. Mykerscope put on it. They been going over it nut by nut, rust spot by rust spot, tosaying nothing of hubcap to hubcap. One good thing, they finding twenny-seven sents under cushon which they giving back to me. Yes indeedy, the puleece are reely giving my car the eegle-eye.

Howcomes puleece so intrusted in Scratchi's old 1920 car? I'll clewing you in, Hon. Ed., it not becaws they thinking of adding same to Hon. Museum. No siree, it on acct. they not thinking it can be done, and when Scratchi showing them it can be done, they just having to finding out howcomes.

It are long story, so I starting from erly end and explaneing. Week ago are coming home from downtowns, driving along road minding own busy ness, when all of a suddens a puleeceman are motioning me to turning into dirt road. I turning in, and finding myself behind cupple other cars.

Few seconds later same-like puleeceman coming to car and saying "Pretty good, buster, going 55 in 45 mile per hour zone." Before getting out of car to argewing with him, I shutting off six-meter reseever in order to avoid running down battry.

Scratchi catching up with cop, and I explaneing I couldn't possibly be doing 55 mph. He turning his hed and telling me I better be catching on that they using modern equipment, that they know what I doing on acct. he checking my speed with radar. And, he adding, radar are never, but never, wrong.

As soon as they catching cupple more cars, all of us driving to neerby Hon. Justis to paying fine. Well, Scratchi not paying. It not the principle of the thing, it are just that I not having ten bux. Feller with white hare and wooden hammer are about to giving me ten days when puleeceman saying I could be rite,

but he not thinking so, and before tossing me in Hon. Calaboos he proving Scratchi rong.

So, we going outside, Hon. Justis driving my car, and puleece car following. I won't say that Hon. Justis are pressing gas pedals to floor, on acct. not having any floor in car, but he surely are revving up engine as fast as it can going. When he thinking he going as fast as possible, he waving to car behind, and puleeceman are reeding his speedometer (can't reeding mine, on acct. can't reeding something you not having).

You know what they finding out? Wide open, down slite hill, my car doing 41 mph. You think that making them happy? Not on your life. Puleeceman saying either radar not working, or I fixing something to fooling radar, and in latter case I better not be leeving town becaws it are against law to monkeying with radar set. He saying first thing he doing is riting nasty letter to peeple what making radar.

That letter reely getting results, as company are flying cupple experts rite in. Only trubble, they proving to puleece that radar are in 1/c tip-top A-1 OK condishun. And, not only that, it working.

Next thing I knowing eleventeen puleecemans are coming and getting Scratchi's car and hawling it off to puleece lab. Along with men from radar company they checking every squeek and rattle and bit of dirt. I keep trying to telling them that it not my fault, that sunspots are cawse of all the trubble, but they not listening.

Finally they asking me if I are radio amchor. I saying yes, so they asking what little black box under dash are for. I explaneing are six-meter reseever. They saying Ah-Hah and getting to work, and I saying Oh-No and sitting down to watching. They setting up radar in front of car, connecking it all up, then turning on six-meter reseever.

Hon. Ed!! I are flabbersgast!! You know what happening?? Little old radar set are reeding 20 miles per hour! And car are standing still!!

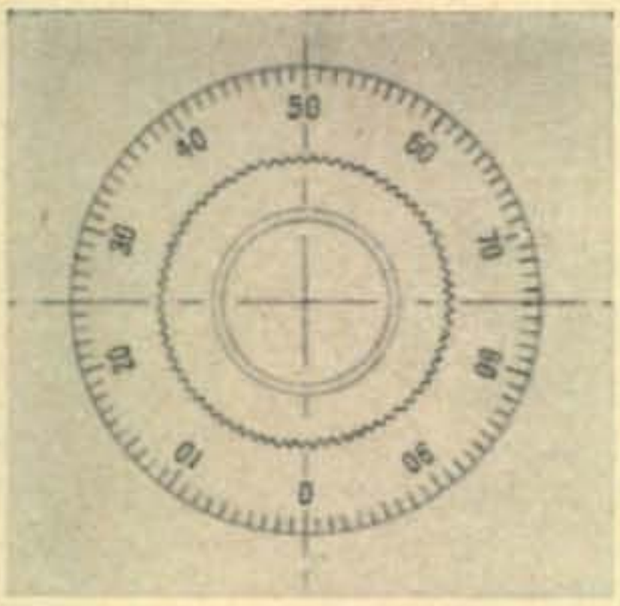
They bringing out more instruments, taking six-meter reseever apart, inserting probes and meters and oscillyscope leeds. Finally they seeming satisfied, and they coming over to me, and saying it can happen to anybuddy, and that they not blaming me.

It seeming that ossilater in reseever are having bad harmonics, and they strong enough that set are radiating on same freakwency as radar set are reseeving. This signal are just enough the making radar think something coming at it at speed of 20 mph.

So, everything hunky-dunky now. They fixing up reseever so it not having harmonics. It just

[*Continued on page 12*]

◀ For further information, check number 8 on page 126.



New heavyweight champion!

Hallicrafters new SX-101 receiver employs heaviest chassis in the industry . . . offers selectable side-band . . . has complete coverage of seven bands.

It's all amateur—and as rugged as they come! Hallicrafters presents the complete answer to ham reception, with every essential needed for today and for the future.

First—built like a battleship. Bigger. Heavier. Second—a marvel of stability—the result of 22 years of experience and development. Third—it brings you a long list of new features:

- **Complete coverage of 7 bands—160, 80, 40, 20, 15, 11-10 meters.**
- **Special 10 mc. pos. for WWV.**
- **Exclusive Hallicrafters upper/lower side band selection.**
- **S-meter functions with A.V.C. off.**
- **Tee-notch filter.**
- **Local oscillator output available for use in heterodyne V.F.O.**

PLUS: Band in use individually illuminated...built-in crystal calibrator...antenna trimmer...dual conversion...full gear drive from tuning knob to gang condensers...five steps of selectivity from 500-5000 cycles...sensitivity—less than 1 microvolt on all bands...direct coupled series noise limiter...50 to 1 tuning knob ratio...and many more.

NEW

FROM

hallicrafters

CHICAGO 24, ILLINOIS

WHERE THE BEST IDEAS IN COMMUNICATIONS ARE BORN

Available with convenient terms from your Radio Parts Distributor.

For further information, check number 9 on page 126.

EDITORIAL . . .
WAYNE GREEN

. . . de W2NSD

NEVER SAY DIE

FCC Note

While talking with the FCC the other day I brought up the problem of the present delay in processing amateur licenses and I asked them what, if anything, might be done to speed things up. Turns out that one of the biggest time stealers they have are the hundreds of letters which come in asking "What about my license? Did you get my application OK?"

I know how they feel. Frequently I get cards and letters around the first of the month saying that someone hasn't yet received this month's issue. I know that by the time I get the card they probably have gotten the issue.

The FCC appreciates that you are eager, they are doing the best they can . . . but with eight to ten thousand applications (all categories) to handle per month you can see how things have got to take a little time. They aren't automated yet. They ask that you sit and stew for at least 60 days before needling them about your application.

The present backlog results in about four to six weeks delay. We checked on a typical recent application and found that it was sent to the local FCC office June 21 (Friday), was graded and sent on to Washington on June 24 (Monday). The license was dated July 26th. That's pretty fast work, eh?

Call Letters

I got some pretty nice plastic call letters and a set of call letter decals at a local boat equipment store. They carry them for use on boats: names and Coast Guard numbers. Cost is 15¢ per letter, cheap enough. The plastic letters come with small holes for mounting and can easily be nailed to the shack wall or bolted to the front panel of your rack. Thought you might be interested.

Ham Emblem

Poor old ham radio has been lurching along for lo these many years without an emblem. Every other fraternity has an emblem, what's wrong with us? Gentlemen, we *need* an emblem . . . a fraternity pin.

Sure, I know, we can wear our call letters. But those of us who have done this have found that they are too conspicuous. We need a small, distinctive sort of thing that will enable any ham to recognize another, not a miniature signboard that people automatically peer closer to read.

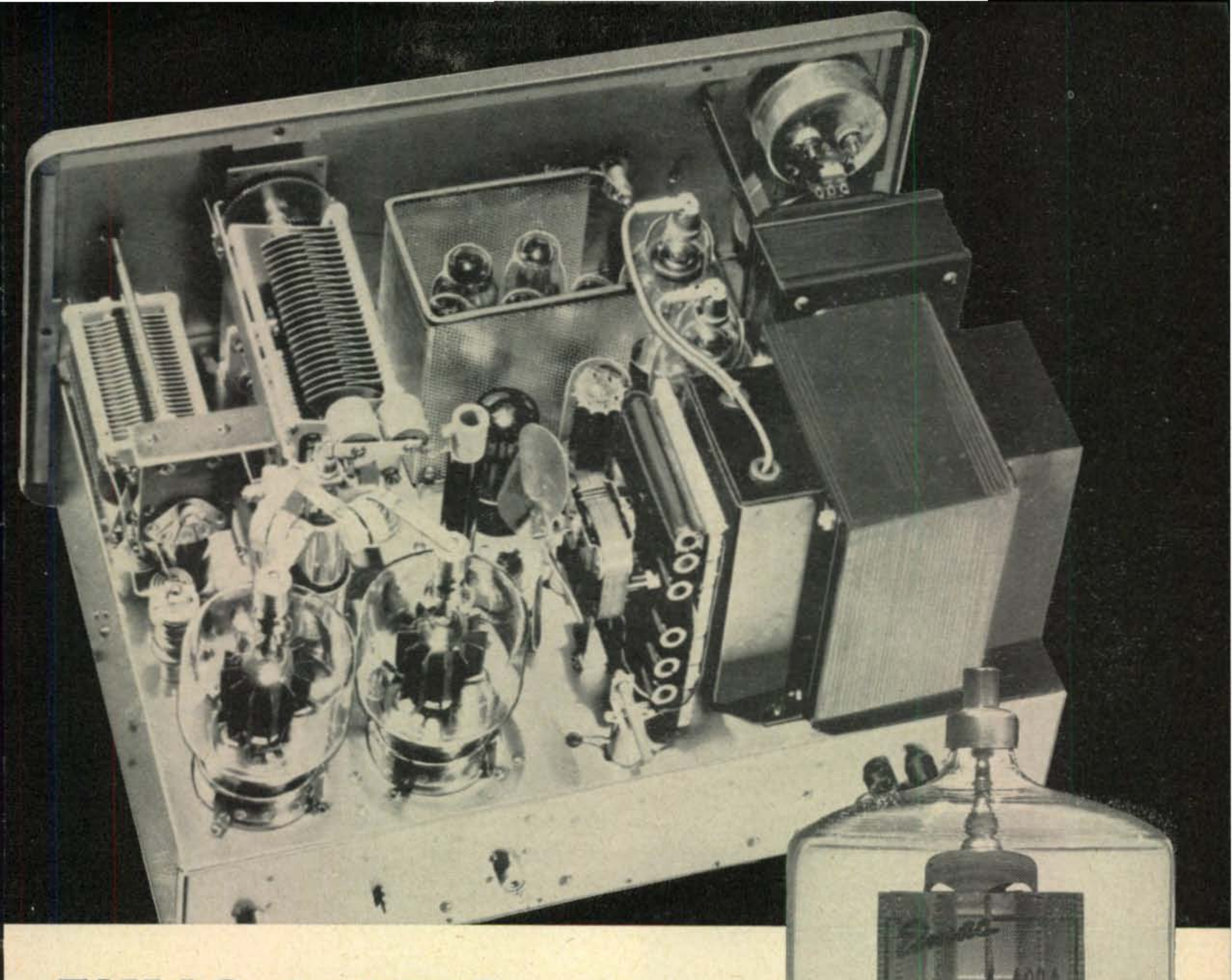
Not being of a benevolent dictator mind this month, and perhaps being temporarily short on artistic genius this is probably a good time to turn the problem over to you. You stew over the design, submit one or two that you think will do the trick, and I'll round up the usual impartial judges. Let's get this thing over with while we are still young . . . the deadline is December 1, 1957. I'll run the best each month in the October, November, December and January issues . . . Winner in the February 1958.

Saved Eleven

The June issue of CQ explained about the FCC's plan to take Eleven Meters away from us and proposed that we write them with our objections. A recent talk with the FCC indicates that a great many of you did take them time to write letters, well thought out letters, and that they are quite impressed. Apparently only a very few letters favoring the proposal were received.

The Save Eleven Contest that I proposed for June 8-9 turned out to be a whopping success, despite generally poor conditions. Everyone had such a wonderful time that we are trying to work out plans to make the contest a yearly affair. I took a couple of days and went through all of the logs received (384 of 'em!) and ferreted out the calls of everyone that got in the contest, even for just a couple of contacts. The total was 1284 stations. Pretty

Bill Thomas, KV4BB, with the source of that potent St. Croix signals: 75A4, 20A, and Bob Adams linear amplifier.



EIMAC 4-400A powers new Viking Thunderbolt

"Full communications power" is the slogan at E. F. Johnson Co., designers and manufacturers of the well-known Viking transmitters. To insure this full communications power in their new Thunderbolt table top linear amplifier, quality minded Johnson engineers specified a pair of Eimac 4-400A's. These tubes loaf along at 1 kw/cw, 750 watts AM linear, and 2 kw P. E. P. linear input.

Eimac offers the amateur a complete line of transmitting tubes — tubes extensively used by equipment manufacturers in amateur, commercial and military transmitters. For complete information on any Eimac tube, contact Eimac's Amateur Service Department or visit your Eimac distributor. Of particular interest is Application Bulletin #9, a comprehensive booklet titled "Single Sideband."

For further information, check number 10 on page 126.

EITEL-McCULLOUGH, INC.
SAN BRUNO · CALIFORNIA
Eimac First for quality, dependability and performance

Eimac

MAXIMUM RATINGS EIMAC 4-400A CLASS AB, TO 110 MC

DC Plate Voltage	4000 volts	Plate Dissipation	400 watts
DC Screen Voltage	850 volts	Screen Dissipation	35 watts
DC Plate Current	350 ma.	Grid Dissipation	10 watts

good, eh? When you consider that few of the DX stations had any warning of the contest and most of the U.S. operators had at best about one week, it is phenomenal. I was very disappointed to find that so few of the top DX operators took time to fire up on the band even for just one contact.

Figuring that there are about 60,000 active amateurs this means that only 2% answered the call. If we can't do better than that then we are in for trouble for sure. 20% would have been little enough of a protest over this. When the next call comes where will you be?

Scratchi [*from page 8*]

going to show you. Always checking for harmonics on radar band when you bilding reesever.

Of course, it mite have been very bad. I reely having been on spot if they asking to see my amchoor lisense, on acct. it expiring same year I buying my car when it brand new.

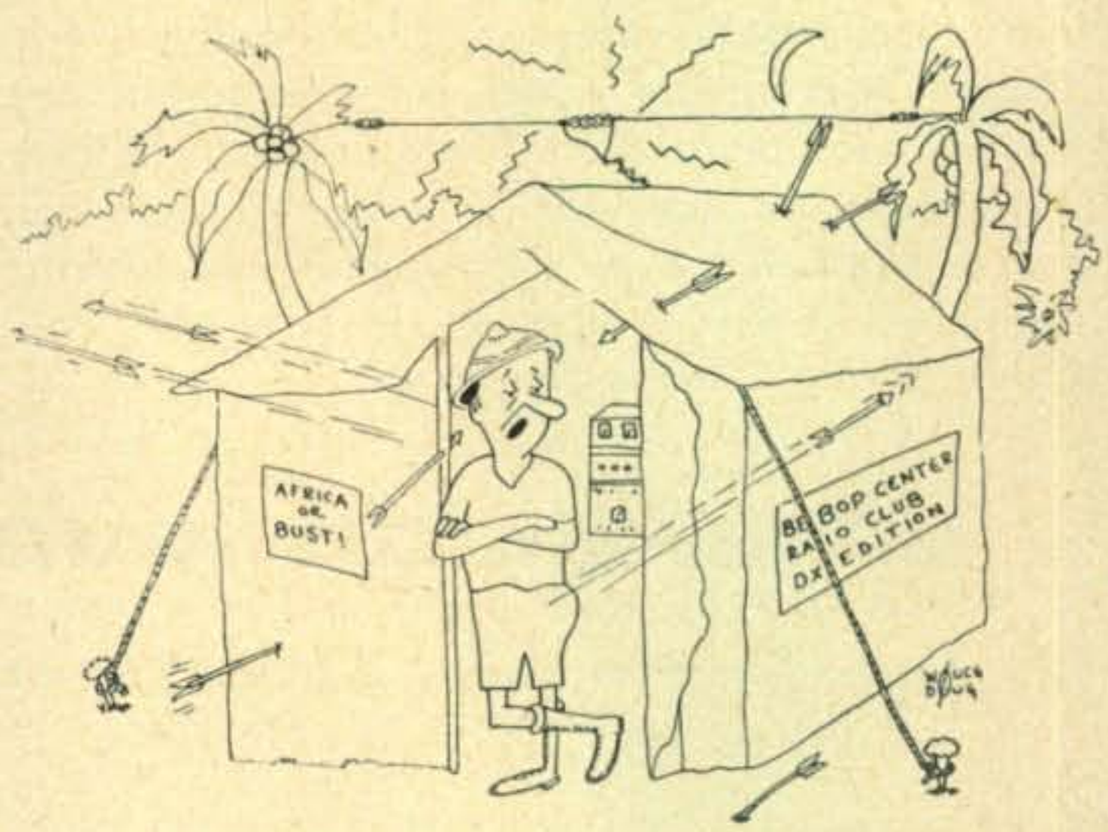
Respectively yours,
Hashafisti Scratchi

Third Party Traffic Legal (Phone Patches)	Don't Talk To These Countries (Even on SSB)
Canada	Cambodia F18, XU
Chile	Korea HL-HM
Costa Rica	Indonesia PK, YB-YI
Cuba	Iran EP-EQ
Ecuador	Viet Nam F18, XV, 3W
Liberia	
Panama	
Peru	
Nicaragua	

Remember . . .

. . . November

(see page 117)



"Better lay off 15 meters Al. . ., you're lousing up 'sheena' again."

For further information, check number 11 on page 126.

WANTED

The Hammarlund HQ-110 is the most wanted amateur receiver in the world. The unprecedented demand for this receiver has resulted in a record backlog of orders. You may have to wait for your HQ-110, but you can be sure of one thing — its quality will not be sacrificed for the sake of speedy delivery.

REWARD

If your Hammarlund distributor has an HQ-110 for immediate delivery — grab it. Dollar-for-dollar, it's the "buy of the year."

In the meantime, if you want to read all about it, send for complete literature . . .

HAMMARLUND

HAMMARLUND MANUFACTURING COMPANY, INC.
460 West 34th Street, New York 1, New York

Established 1910

Export: Rocke International, 13 E 40th St., N. Y. 16, N. Y
Canada: White Radio, Ltd., 41 West Ave N., Hamilton, Can

For further information, check number 12 on page 126.

THE VIKING "THUNDERBOLT"

2000

It's new! More "talk-power" to smash through QRM! A dominant signal on all popular amateur bands!

Introducing the Viking "Thunderbolt"—the hottest linear amplifier on the market today! Here's solid communication power—over 2000 watts P.E.P.* input; 1000 watts CW; 750 watts AM linear; in a completely self-contained desk-top package. Continuous coverage 3.5 through 30 megacycles—instant bandswitching. The "Thunderbolt" may be driven by the Viking "Navigator," "Ranger," "Pacemaker," or other unit of comparable output. Drive requirements are approximately 10 watts in Class AB_2 linear, 20 watts Class C continuous wave. When used with the "Pacemaker" or similar exciter, the non-inductive input circuit requires no grid tuning. Wide range pi-network will match transmission line impedances from 40 to 600 ohms. Two meters provide constant visual check—plate current meter also reads watts input, and a second meter reads grid current or plate voltage. Completely self-contained with all power supplies. 115 VAC-230 VAC, 50-60 cycle single phase.

$450.00

Cat. No. 240-353-1 Viking "Thunderbolt" Kit with tubes . . . . Amateur Net†

Cat. No. 240-353-2 Viking "Thunderbolt" wired and tested, with tubes . . . . **$525.00** Amateur Net†

TUBE COMPLEMENT: (2) 4-400A tetrode—Final Amplifier, (2) 866A—High Voltage Rectifier, (1) 6BY5—Bias Rectifier, (1) 5U4—Screen Voltage Rectifier, (1) VR90—Bias Regulator, (2) VR105 and (2) VR150—Screen Voltage Regulator.

†Prices subject to revision. November 1957 delivery anticipated.

See it in operation —You are invited to drop into Room 2346 at the Palmer House during the National ARRL Convention in Chicago (August 30, 31, September 1st) to operate this remarkable power package. Listen for W9ZSO/9 on the air from convention headquarters.

WATTS P.E.P.*

** The F.C.C. permits a maximum one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics. The Johnson Viking "Thunderbolt" Linear Amplifier produces these higher powers and is the only equipment available to amateurs which can reach the maximum legal limit of "Talk-Power".*

DRIVE IT WITH THE "PACEMAKER"

More than an exciter—a self-contained sideband transmitter with VOX—anti-trip —built-in power supplies!

Here to stay! The "Pacemaker" is an outstanding power bargain when used alone or as an exciter for the "Thunderbolt" linear amplifier. 90 watts input CW and SSB (P.E.P.) . . . 35 watts AM! Bandswitching 80, 40, 20, 15 and 10 meters.

YOUR BEST BUY—AND HERE'S WHY!

1. EXCLUSIVE—Unique circuitry uses only 1 mixer for improved spurious signal rejection greater than 50 db. Eliminates great multiplicity of sum and difference spurious products inherent in systems utilizing 2 or 3 mixers.

2. BALANCED RANGE AUDIO—Does not sacrifice low frequency response as is usually necessary in filter-type equipment.

3. BUILT-IN VFO—Highly stable, temperature compensated and voltage regulated. *Complete* coverage of all bands without crystal switching or re-tuning.

4. FRONT PANEL CARRIER BALANCE—Provides optimum carrier rejection.

5. NO FIXED IMPEDANCE OUTPUT CIRCUIT—Wide range pi-network output assures proper load impedance to final amplifier.

6. INDIVIDUAL CRYSTAL CONTROL—of sideband generating frequency for each band.

Cat. No. 240-301 Viking "Pacemaker" wired and tested with tubes and crystals, less key and microphone . . . . . Amateur Net **$495.00**

See your authorized Johnson distributor for easy payment terms!

E. F. Johnson Company

2932 SECOND AVENUE S. W. • WASECA, MINNESOTA

Letters . . . to the editor

DSB

Dear Wayne:

In looking over the June 1957 issue of CQ I noticed two things worthy of comment:

There is an error in the schematic diagram of the synchronous adapter which I am sure was my fault. Pin 6 and 7 of V8B are shown to be wired together, it should look just like V8A. Fortunately, it would appear as a quite obvious mistake to the builder when he applied plate voltage. Another not quite so obvious error is the decimal points that failed to print. R9, 17, 26, 42 and 51 should read 1 Meg. I believe that these points should be published in a prominent place as soon as possible.

W4QT states in paragraph (d) of his letter that a DSB transmitter allows operation at only half the power of SSB. It is not intended to debate the validity of his reasoning here, but forthcoming soon will be my paper on DSB wherein it is shown that the converse is true.

John K. Webb
WØAHM

Dear Wayne:

Just a short note to congratulate you, Dr. Costas, and CQ on the excellent series on Double Sideband. As we see it here, Double Sideband has caused more comment on the air and more hams to go to work with a soldering iron than anything else in years.

Like the rest of the old timers (the term, old timer, includes all the fraternity up to novices with at least 3 months time on their ticket), we lament the passage of the Home-brew and the incidental skills that go along with it. Your articles have really given the science of home construction a real shot in the arm.

We in the Air Force MARS Program are particularly gratified that your articles have been so down to earth and within the financial and technical grasp of the youngsters; for it has given them the way and means to participate in a fascinating new aspect of our hobby.

The "Great Debate" will, of course, go on; but the relative merits of Double Sideband versus Single Sideband and Amplitude Modulation are secondary to the fact that Double Sideband has given us all a new Technique to experiment with and has added to our individual store of technical knowledge.

Whether "fer or agin" it, it has stimulated both discussion and experimentation and, best of all, has raised Home-brew once more to an honorable status.

Eugene J. Mc Elroy, W1AFO
Captain, USAF
Chief, Military Affiliate Radio System

Dear Wayne:

To those would be Amateurs who can't get started because of QRM from the XYL. Let me say that I have a good XYL, one who has only my welfare and Amateur Radio at heart. When I got my Novice license, she didn't object when I moved my radio gear into the bedroom and set up the shack in the corner, and nearly wrecked the apartment in a frustrated effort to find a suitable spot for an indoor antenna. Nor did she mind when it became apparent that the radio shack was no longer in the bedroom, but that we were sleeping in the radio-room.

She has, as you can see, cooperated in everyway, and the only thing that has deterred me has been a lack of funds, having several hungry mouths to feed. However, when I advised the XYL that I wished the wheels set in motion to start a savings fund for the purchase of a 12 volt, 6 meter Gonset Communicator, she immediately took action.

[Continued on page 96]

new

completely... brilliantly new!

GONSET

COMMUNICATOR III

Introducing a new series of complete VHF station "packages" . . . for 2 and 6 meters . . . for ground-to-air and other VHF applications.

New Linear Amplifier

These modern successors to the highly regarded Communicator family combine, in a single unit, all the features found previously only in several different models. Communicator III offers you these advantages as well as many more important, wholly new features for improved performance and operating convenience.

Now . . . for even better performance . . . .

for every model in every frequency range . . . the following:

- Modern inside and out. Finished in attractive Alpine White enamel with knobs in Gun Metal Blue. Cabinet size is approximately the same.
- 6V DC and 12V DC and 115V AC. All three. One vibrator. Simple inside strapping changes voltages.
- Full press-to-talk operation. (Actuated by button on microphone) Transmit-receive switch on panel can be used if desired.
- Receiver: New low-noise X155 RF tube in sensitive "Cascode" with AVC to avoid blocking tendency from very strong locals. Special gang-tuned circuits provide new high order of image rejection. Improved I-F selectivity. Gonset noise limiter. Adjustable squelch. Earphone provisions.
- Full-vision slide-rule-type tuning dial.
- Squelch for silent standby. Control on panel.
- Transmitter: All tunable circuits now have panel knobs. New gang-tuned circuits reduce spurious responses to negligible values. New 6L6GB modulator tube gives heavier modulation.
- Panel meter replaces "Green eye." Meter switches to exciter or RF output or to receiver for indication of relative signal level.
- Provision for 6 crystals with panel selector switch. (Also operation with external VFO.)
- Silicon diodes eliminate rectifier tubes.
- New line includes Linear Amplifiers in all frequency ranges and entirely new VFO which has ranges for both 2 and 6 meters.

less microphone and crystals. 269.50

Deliveries start in September. Better get your order in now

For further information, check number 16 on page 126.

GONSET
BURBANK, CALIFORNIA

DIVISION OF L. A. YOUNG SPRING & WIRE CORPORATION

GONSET

Contest Calendar

Frank Anzalone, W1WY
14 Sherwood Road
Stamford, Conn.

September	7— 8	LABRE—CW
September	14—15	LABRE—Phone
September	21—22	RCP—CW/Phone
September	28—29	MARC—VE/W
October	5— 6	VK/ZL—Phone
October	12—13	VK/ZL—CW
October	26—27	CQ W.W.—Phone
Nov. 30 —	Dec. 2	CQ W.W.—CW

Panamerican Contest

The Radio Club Peruano came up with a new one this year. This contest is open to the 21 American Republics plus Alaska and Canal Zone.

1. Contest Period:
1200 EST (noon) Saturday, September 21 to 2400 EST (midnight) Sunday, September 22.

2. Bands:
All amateur bands may be used. Entries for the CW or Phone sections will be judged separately.

Cross band or CW to Phone contacts will not be allowed.

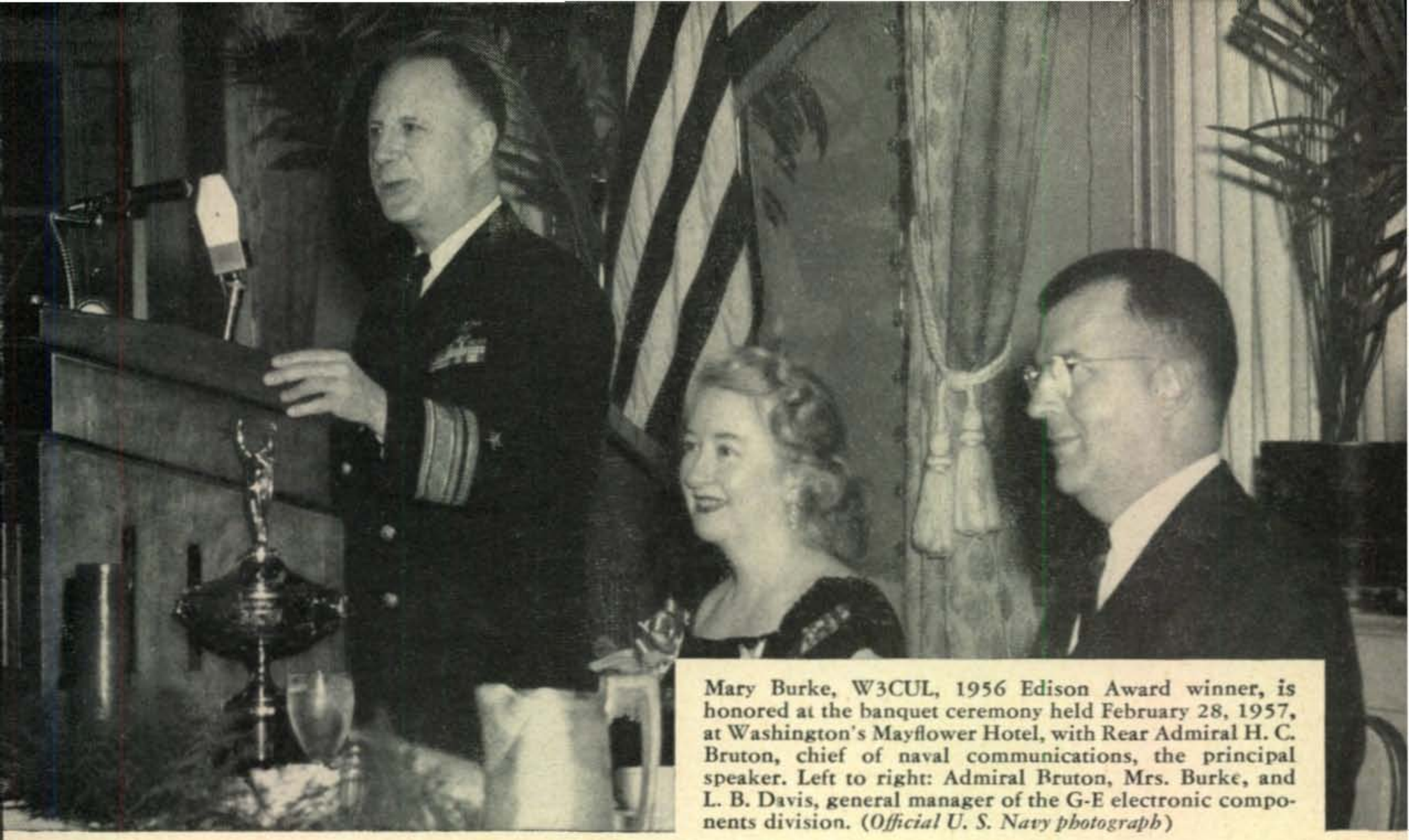
3. Serial Numbers:
The usual five digits on Phone and six digits on CW. The first two or three representing the signal report. The last three digits consisting of any random number chosen for the first QSO. During all subsequent contacts the number just received should be sent as the next serial number. Example:

Date	*EST*	*Station*	*Sent*	*Recd*	*Band*	*Mult*	*Pts*
21	1210	OA4FT	58234	59333	40	1	1
"	1215	CE3AG	57333	58724	40	2	1
"	1220	YV5DE	59724	56911	20	3	1
"	1225	OA4FT	59911	56337	20	4	1

4. Scoring:
a. Each QSO counts one point. However contacts with stations in one's own country do not count.
b. Multiplier — One per country on each band. Panama and the Canal Zone counting as one country.
c. Final Score — Multiply your total multiplier by the total number of points on all bands.

5. Awards:
The top scorer of each country will receive a medal. The top scorer of each W/K and VE call area will receive a certificate.

[*Continued on page 98*]



Mary Burke, W3CUL, 1956 Edison Award winner, is honored at the banquet ceremony held February 28, 1957, at Washington's Mayflower Hotel, with Rear Admiral H. C. Bruton, chief of naval communications, the principal speaker. Left to right: Admiral Bruton, Mrs. Burke, and L. B. Davis, general manager of the G-E electronic components division. (*Official U. S. Navy photograph*)

NOMINATIONS NOW OPEN FOR 1957 EDISON AWARD

The 1957 Edison Award once more will honor an amateur who has rendered outstanding public service—will be a tribute to the assistance which all radio amateurs offer their communities and the nation when need arises.

A committee of distinguished and impartial judges will select the Edison Award winner. He will be chosen from candidates who are nominated in letters from you and others.

Since only names submitted by letter will be considered for the Award, your participation and support are essential. Start now to choose a suitable candidate! The rules at right will help you in preparing your nominating letter. Mail it to *Edison Award Committee, General Electric Company, Electronic Components Div., Owensboro, Ky.*

RULES OF THE AWARD

WHO IS ELIGIBLE. Any man or woman holding a radio amateur's license issued by the F.C.C., Washington, D.C.. who in 1957 performed a meritorious public service in behalf of an individual or group. The service must have been performed while the candidate was pursuing his hobby as an amateur within the continental limits of the U. S.

WINNER OF THE AWARD will receive the Edison trophy in a public ceremony in Washington, D.C. Expenses of his trip to that city will be paid.

$500 GIFT. Winner will be presented with a check for this amount in recognition of the public service he has rendered as a radio amateur.

WHO CAN NOMINATE. Any individual, club, or association familiar with the public service performed.

HOW TO NOMINATE. Include in a letter a full description of the service performed, as well as the candidate's name, address, and call letters. Your letter of nomination must be postmarked not later than January 3, 1958.

BASIS FOR JUDGING. All entries will be reviewed by a group of distinguished and impartial judges. Their decisions will be based on (1) the greatest benefit to an individual or group, (2) the amount of ingenuity and sacrifice displayed in performing the service. The judges will be:

E. ROLAND HARRIMAN, Chairman, The American National Red Cross.

ROSEL H. HYDE, Commissioner, Federal Communications Commission.

GOODWIN L. DOSLAND, President, American Radio Relay League.

Winner of the Award will be announced on or before Thomas A. Edison's birthday, February 11, 1958.

Employees of the General Electric Company may nominate candidates for the Edison Radio Amateur Award, but are not permitted to receive the Award.

For further information, check number 18 on page 126.

GENERAL ELECTRIC

166-181

Hamfests . . .

Springfield, Missouri

The SMARC will hold its annual hamfest on September 8th (9 AM) in Fassnight Park, Springfield, Missouri. Registration only 50¢, buffet free (FREE). Transmitter hunt, equipment demonstrations, and all like that. Buffet (chow) free. 75M talk-in station.

Kentucky

The Blue Grass Amateur Radio Club will hold its annual Hamfest Sunday September 29th (all day) at the beautiful Keenland Racing Park, Lexington, Kentucky. Be there.

Hamfests:

CQ will list all hamfests, conventions and organized rag chews providing we are notified of the spectaculars. Deadline: 40 days before month of publication. The earlier we hear about it the better position your notice will get in the magazine.

Ohio

20th Annual Stag Hamfest, Sunday, September 8, 1957. Over 900 amateurs attended last year. Sponsored by the Greater Cincinnati Amateur Radio Association. The location is two miles South of Greenhills, Ohio, near Cincinnati, at Kolping Grove, on Winton Road. Registration $2.50 at the gate—here's what you get: hot dogs all day long, donuts and coffee served 'till noon, beer and pop served all day, full picnic dinner and supper (all you can eat), rain or shine. Lots of games and activities, radio-controlled model airplane show, etc. For additional information, contact Paul R. Wolf, W8IVE, 741 Delta Ave., Cincinnati 26, Ohio.

[*one more on page 99*]

Stolen, as usual, from

AUTOCALL

the bulletin of the Washington D. C. Mobile Radio Club

Hmmm, in the August answer to the July problem #1 I (and a lot of others) noticed that "D" got credited as 3. T'wan't, t'was 7. These things happen.

August #1: Nobody lost. #2: 15,625, a loverly bunch of cocoanuts.

Now let's get down to business for this month. Let me know if you'd prefer to have the answers given the same month as the problem rather than having to stew for four weeks each time. Just drop a note to the Puzzle Editor (W-2NSD). If you have any puzzle to donate you

Printed Circuit OSCILLATORS

The operating tolerance of a crystal is greatly affected by the associated operating circuit. Because of our precision printed circuits and quality components, the use of the FO-1 oscillator in conjunction with the FX-1 crystal will guarantee close tolerance operation—up to .001% if desired.

FO-1 and FO-1B OSCILLATOR

Kit (less Tube and Crystal) $3.95

Wired and Tested with tube (less Crystal) $6.95

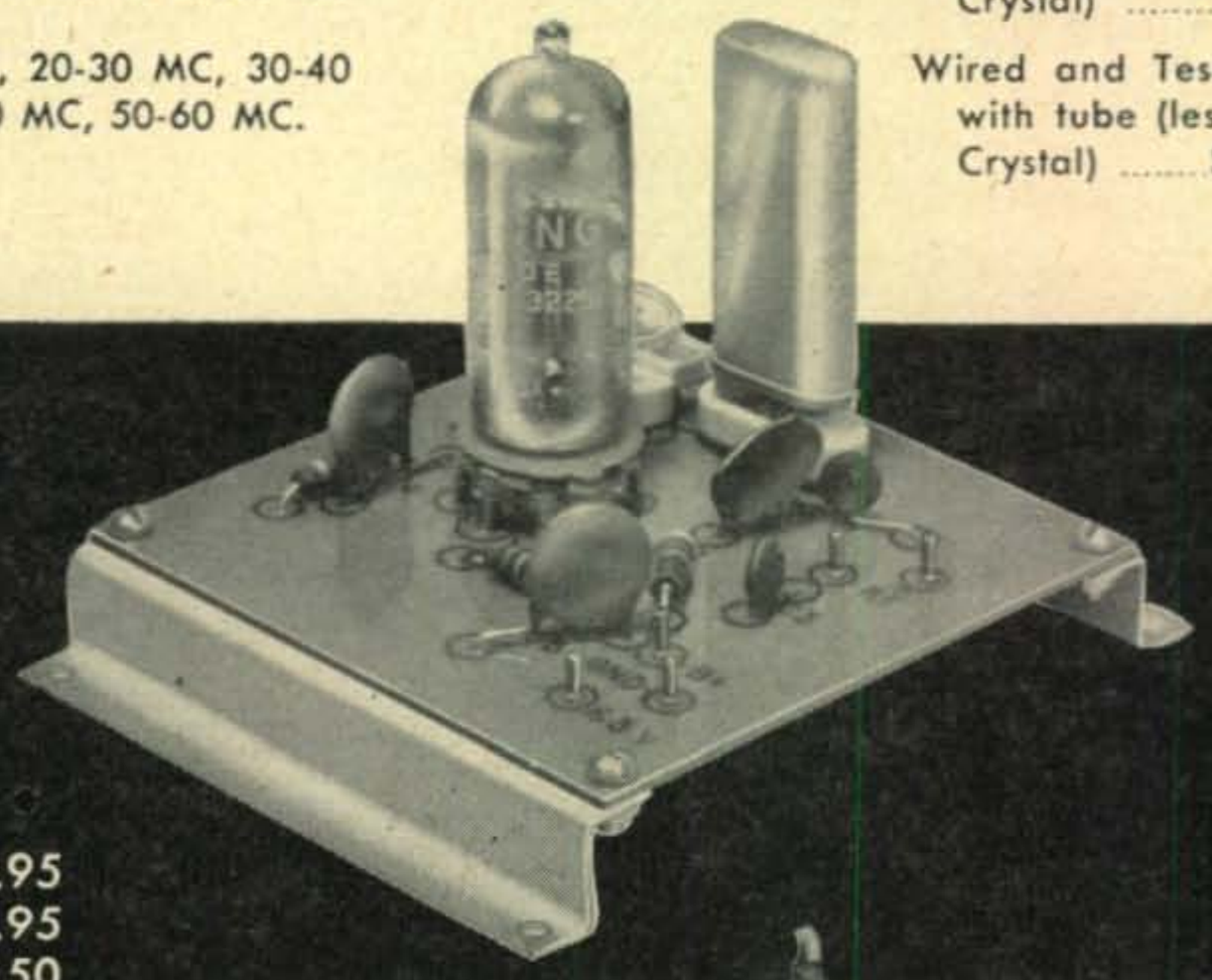
FO-1

Fundamental Operation, 200 KC to 15,000 KC.
Available in kit form, or wired and tested. Tolerances of .01% and .005% with appropriate FX-1 crystal.
Tolerances of .0025% and .001% available only in wired and tested form, together with appropriate FX-1 crystal.

FO-1B

Overtone operation (five bands) 15 MC to 60 MC.
Same as FO-1, EXCEPT: please specify which band coil you desire in these five ranges:
15-20 MC, 20-30 MC, 30-40 MC, 40-50 MC, 50-60 MC.

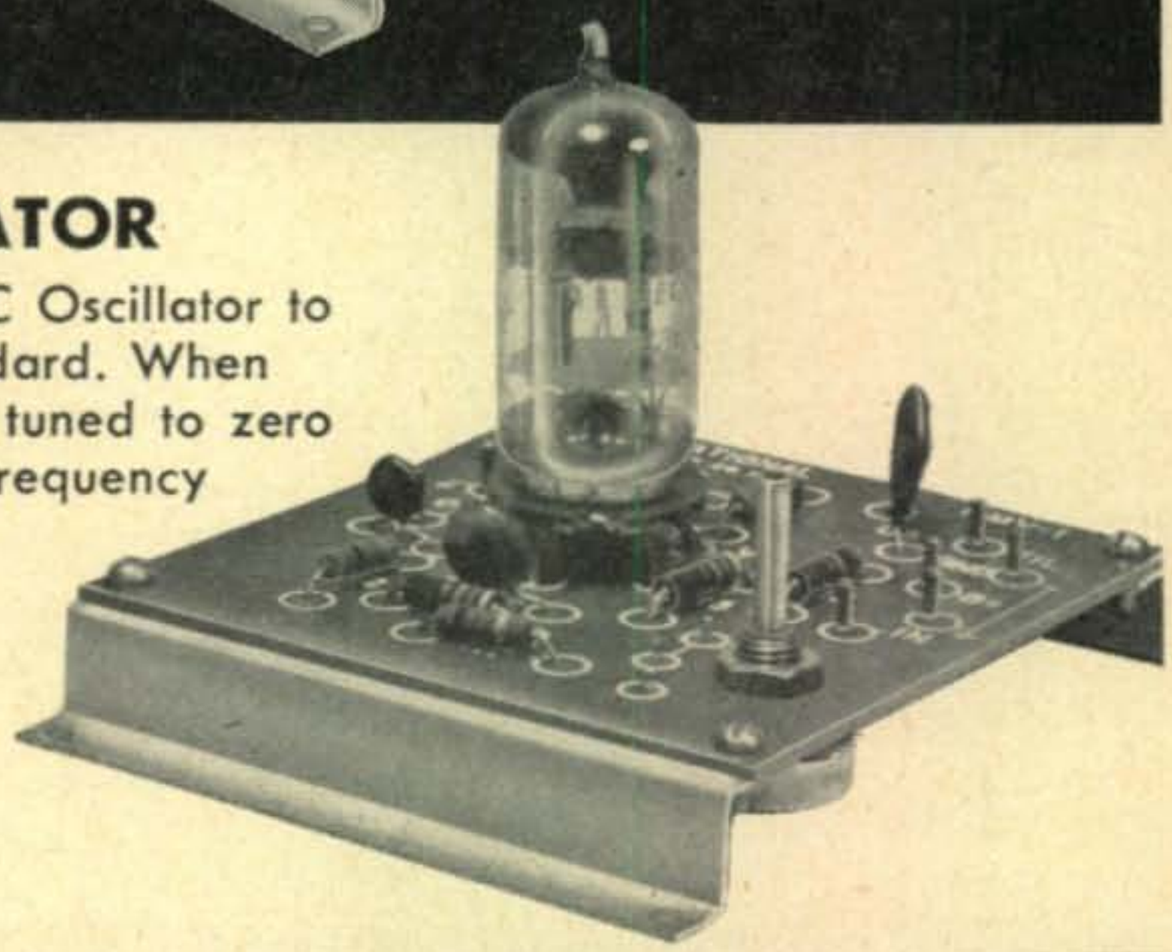
FO-1L OSCILLATOR



Printed circuit oscillator for band-edge calibrator and frequency standard use.
(Additional requirements:
Power 6.3 volts AC @ 150 ma
150 volts DC @ 8 ma)

Kit Complete with
Tube and Crystal.....$12.95
Wired and Tested.....$15.95
100 KC Crystal Only.....$ 8.50

FMV-1 10 KC MULTIVIBRATOR



Used in conjunction with the FO-1L 100 KC Oscillator to form a complete secondary frequency standard. When the FO-1L 100 KC Oscillator is accurately tuned to zero beat with WWV transmissions, precise frequency measurements to 30 MC can be made. (Additional requirements: Tube—12AT7; Power—6.3 volts AC @ 300 ma; 150 volts DC @ 15 ma).

Kit, less tube.....$5.95
Wired and Tested, with tube.....$8.95

HOW TO ORDER

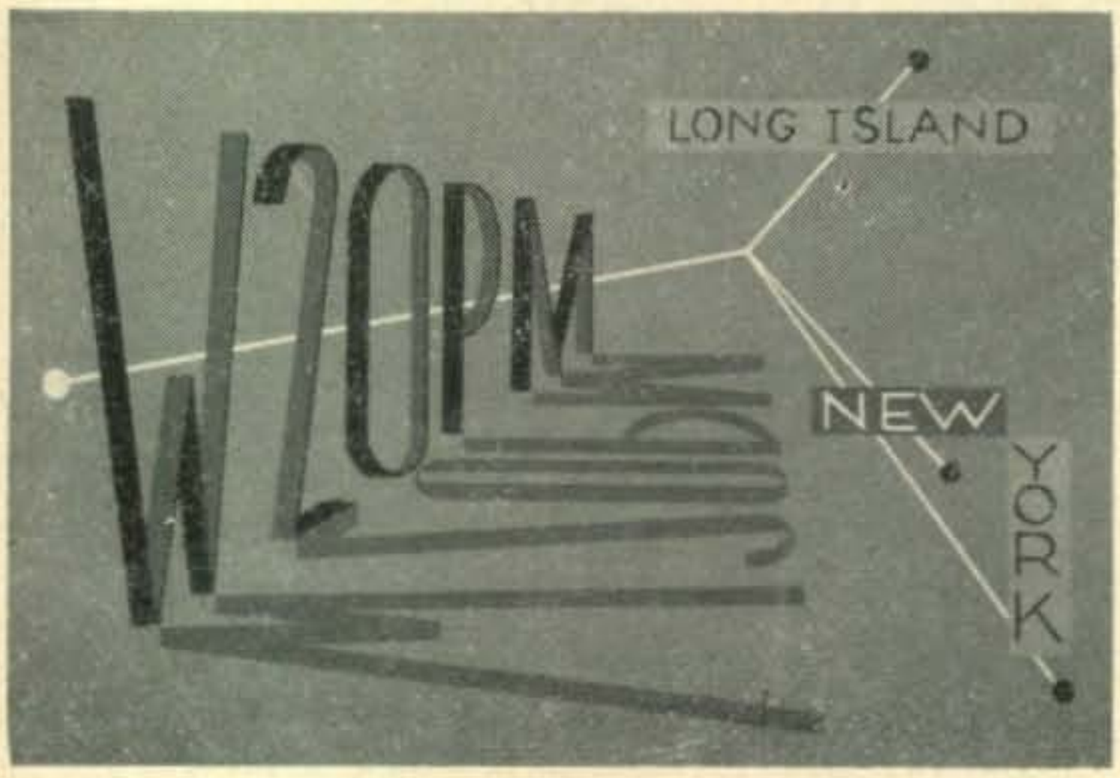
For fastest possible service, International Units and/or Crystals are sold direct. When cash accompanies order, International prepays postage. Otherwise, shipments are made C.O.D.

FREE CATALOG
For future reference, send for FREE Catalog showing International's complete line. Crystals available from 60 KC to 100 MC.

International
CRYSTAL MFG. CO., INC.
18 N. LEE OKLAHOMA CITY, OKLA. PHONE FO 5-1165

For further information, check number 20 on page 126.

QSL Contest



The winner this month is W2OPM with his home made silk screened gem. All the screens were hand cut. The contest continues on, nevertheless, with the prize each month being a two year extension to CQ and all the attendant publicity. Have we declared your card a loser yet?

PUZZLER [*from page 20*]

might include them too, but for heaven's sake send the answers . . . I go crazy each month trying to figure out the puzzles so I can print the answers.

#1. This is a real oldie. It concerns a chap who lives on the 20th floor. In the morning he rides the elevator down, but in the evening he rides only to the 18th floor and walks up the two remaining flights. Why does he do this. Heh, heh.

#2. Three men played a game with the understanding that the loser was to double the money of each of the other two. After three games each had lost just once and each ended up with $24.99. How much did each start with?

#3. We'll include one ridiculously easy problem to assuage your troubled inferiority complex. While four watchmen were guarding an orchard, a thief slipped in and stole some apples. On his way out he met three of the watchmen one after the other and to each in turn he gave half of the apples he then had and two besides. Thus he managed to escape with one apple. The fourth watchman reported the whole thing to the boss, but that is beside the point. The problem, naturally, is: how many apples did the thief originally start with.

#4. Are we going to have trouble with you about that subscription? You'd better be on the scrolls before November. ■

*

Adirondack Radio, Amsterdam, N. Y.; **A & F Electro Mart,** Milwaukee, Wisc.; **A G Radio Parts,** Elkins Park, Pa.; **Alco Electronics,** Lawrence, Mass.; **Amateur Radio Equipment,** Wichita, Kans.; **Amateur Radio Supply,** Seattle, Wash.; **Arcby Electronics,** Louisville, Ky.; **Bluff City Distributing,** Memphis, Tenn.; **Bob & Jack's Store for Hams,** Des Moines, Ia.; **Ham Buerger,** Philadelphia, Pa.; **Burghardt Radio Supply,** Watertown, So. Dak.; **Burstein-Applebee,** Kansas City, Mo.; **Busacker Electronics,** Houston, Tex.; **C & G Radio,** Tacoma, Wash.; **Chester Electronic,** Kenosha, Wisc.; **James W. Clary Co.,** Birmingham, Ala.; **Crabtree Wholesale Radio,** Dallas, Tex.; **Curie Radio,** Chattanooga, Tenn., & Huntsville, Ala.; **Custom Electronics,** Dayton, Ohio; **Demambro Radio,** Boston, Mass.; **Denison Radio,** Denison, Tex.; **Ebinger Electronics,** St. Louis, Mo.; **Electronic Distributors,** Muskegon, Mich.; **Electronic Equipment & Engr.,** Corpus Christi, Tex.; **Electronic Supply,** Melbourne & Miami, Fla.; **Electronic Supply,** Battle Creek, Mich.; **Electronic Wholesalers,** Washington, D. C.; **Elliott & Hanson,** Rochester, Minn.; **Elmar Electronics,** Oakland, Calif.; **Evans Radio,** Concord, N. H.; **Farnsworth Radio & TV** Waterloo, Ia., **Freck Radio & Supply,** Asheville, No. Car.; **Green Mill Radio,** Chicago, Ill.; **H & H Electronic,** Rockford, Ill.; **Harrison Radio,** New York, N. Y.; **Harris Radio,** Fon Du Lac, Wisc.; **Henry Radio,** Butler, Mo., & Los Angeles, Calif.; **Industry Services,** Arlington, Va.; **J & M Radio & TV Supplies,** Rockford, Ill.; **Ken-Els Radio,** Cedar Rapids & Fort Dodge, Ia.; **Klaus Radio & Electric ,** Peoria, Ill.; **Meyers Electronics,** Bluefield, W. Va.; **Northwest Electronics,** Spokane, Wash.; **Payette Radio,** Montreal, Can.; **Peard Electronic,** Jacksonville, Fla.; **A. A. Peters Electronic,** Allentown, Pa.; **Pioneer Electronic,** Cleveland, Ohio; **Portland Radio,** Portland, Ore.; **Premier TV Radio,** Chicago, Ill.; **Prestwood Electronics;** Augusta, Ga.; **Radio Distributing,** Harrisburg, Pa.; **Radio Equipment,** Norfolk, Va.; **Radiolab,** Kansas City, Mo.; **Radio,** Tulsa, Okla.; **Radio Parts,** Milwaukee, Wisc.; **Radio Supply,** Richmond, Va.; **Radio & Television Clinic,** Baltimore, Md.; **Radio Trade Supply,** Des Moines, Ia.; **Reno Radio,** Detroit, Mich.; **Rogers Radio,** Denver, Colo.; **Roswell Electronic,** Cambridge, Mass.; **Sacramento Amateur Radio & TV,** Sacramento, Calif.; **San Francisco Radio & Supply,** San Francisco, Calif.; **Southern Radio,** New Orleans, La.; **Southwest Wholesale Radio,** Phoenix, Ariz.; **Tydings Co.,** Pittsburg, Pa.; **Uncle George's Radio Ham Shack,** Silver Spring, Md.; **Universal Service,** Columbus, Ohio; **Valley Electronic,** Burbank & Van Nuys, Calif.; **W & W Distributing,** Memphis, Tenn.; **Walker-Jimieson,** Gary, Ind.; **Young & Young,** Lawrence, Mass.; **Yukon Radio,** Anchorage, Alaska; **X-Ray Electronic,** Springfield, Mo.; **World Radio Laboratories,** Council Bluffs, Ia.

Now, increased safety factor through use of the 4-400A Final Tube

Globe King 500B

A bandswitching transmitter for 540 watts on fone and CW; 540 watts on SSB (P.E.P.), with 10W external exciter.

Outperforming any rig in its price and wattage range, the King bandswitches 10-160M in a 31x22x14¾" handsome cabinet, especially designed for TVI-suppression. The Transmitter is relay controlled; includes a built-in antenna relay; built-in VFO; and separate power supply for modulator section, allowing better overall voltage regulation. Commercial-type compression circuit keeps modulation at high level. King features grid-block keying for signal clarity. Pi-network matches most antennas, 52-600 ohms. Provisions for crystal operation.

Cat. No. 145AF001—Wired & Tested..... **$725.00**

All WRL Electronics Transmitters operate on most CAP and MARS frequencies.

Globe Scout 680

65 watts CW; 50 watts on fone, plate modulated.

A compact, self-contained, bandswitching transmitter for operation of the 6 through 80 meter bands, with built-in power supply. High level modulation is maintained. TVI-suppressed cabinet. Pi-network output on 10-80M; link-coupled on 6M, matching into low impedance beams. New type, shielded meter. Globe Scout 66 is identical, except bandswitching 10-160M. Size: 8x14x8".

Model 680
Cat. No. 145AF007—Kit..... **$89.95**
Cat. No. 145AF006—Wired & Tested... **$109.95**
Model 66
Cat. No. 145AF005—Wired only..... **$99.95**

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For further information, check number 22 on page 126.

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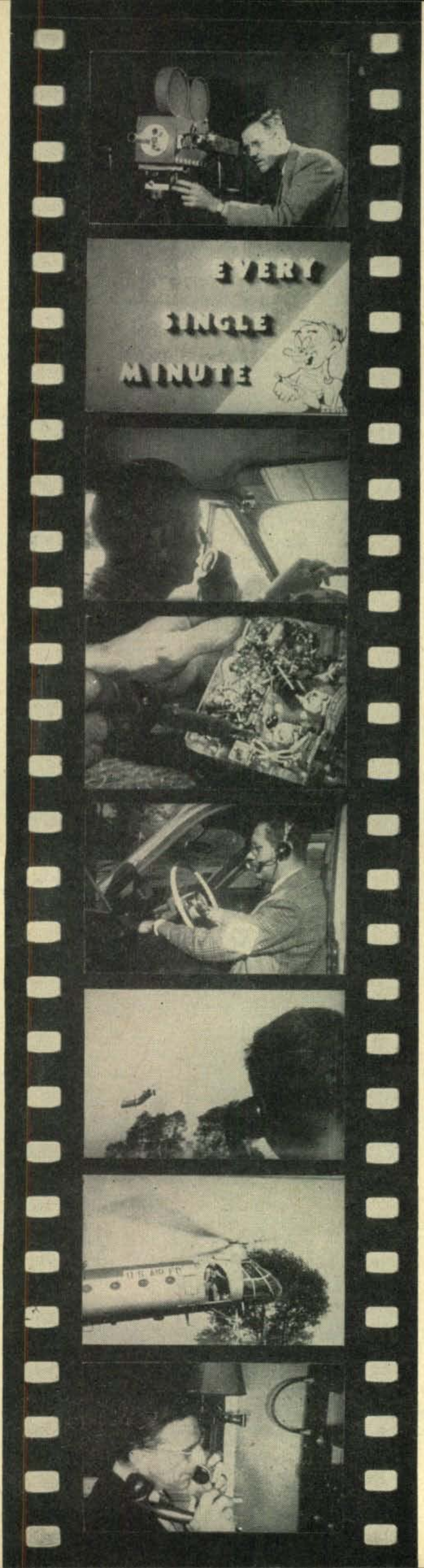


Has your club tried . . .

Making A Movie

George W. K. King, W3PXY
200 Midland Road
Springfield, Pa.

Many radio clubs at some time or another have tried making a motion picture of their activities. Should you wish to tackle the job the following may give you a few pointers.

The end result of a ragchew between W3VXN, W. J. (Bill) Bornmann, and W3NIP, Charles M. Synder, was that a black and white film should be made to show activities of the Phil-Mont Mobile Radio Club of the Philadelphia area. (See CQ Mar. '57, front cover)

This film was to be of interest to a general audience, any ham group, to tell the story of hams in general, and mobile radio in particular.

W3VXN spent many afternoons and evenings visiting the shacks of club members, shooting a few scenes and partaking of many cups of coffee.

Since Phil-Mont is a mobile club, most of the shooting concerned outdoor activities. At times we had more than 30 mobiles available for scenes. Everyone wanted to "ham" it up. When cars were involved in a particular sequence they were directed by "walkie-talkie." This was a great aid in having the mobiles start and stop at any particular time.

A series of simulated emergencies to further document club activities and to enhance the film from a public relations standpoint were planned. However, Hurricane Carol produced a real emergency. No simulation was necessary. Flood pictures by W3VXN highlighted the film and helped point out the genuine service that hams perform. From a local radio commentator's broadcast of Phil-Mont activities came the title . . ."Every Single Minute."

[*Continued on page 112*]

Mike Caveney, VE3GG
29 Byng Ave., Willowdale,
Ontario, Canada

XYL's

Probably you will remember from your history books on ancient Greece, that old philosopher Socrates who went mooching around the street corners of Athens, inviting arguments, by stopping young men and asking questions about politics, etc.,—he sure was a nosy guy—and so am I.

My pet question, "How do you like being married to a radio Ham," is always directed to women; the wives of radio amateurs.

It is my leading question when visiting their homes, or they visit mine—at hamfests, in fact anywhere there is a chance to herd them into a quiet corner where I can hear the answer before some hilarious ham creeps up to slap me on the back so hard my false teeth bounce into the lady's lap.

Some of the answers are of interminable length, while others—working on the theory that "brevity is the soul of wit" just shout "NUTS"! I think I had better give you three sample case histories so that you can get a fair cross section of how the ladies in question feel about it.

Case History No. 1

She was a sweet young thing, pretty as all get out, only married two months and bubbling over with avid chatter. "Oh I think ham radio is simply *wonderful!* Robert used to tell me all about it before we were married, but I never *dreamed* how fascinating it is,—really. We both sit up very late every night on QSO's here and there on phone. I was a bit afraid of the mike at first, but *now*—well Robert says I am getting to be a chronic rattle prattle. I think it's really good for Robert too when he comes home after a hard day. It's like a restorative to him to get on the air. Most men come home, eat dinner, read the paper and fall asleep. See what I mean? There we are, the two of us, chattering like magpies far into the night. But I think I am now more enthusiastic about ham radio than he is. At any rate he is the first to always want to QRT and go to bed. I want Robert to teach me how to get my own license so that I can be on the air myself when he is not home, but he thinks we should have a baby first, then study for my license. Where in the world am I going to get the time to study for a license if I have a baby first? I sure would love to have one though. What do *you* think I should get first?"

Case History No. 2

This lady was evidently in her forties. Her husband was driving, the car crowded with hams. I sat with her in the back seat. Her answer to my stock question came in brittle embittered tones. "I have no use for ham radio—never did. If there ever was a radio widow, I'm one! All his time is spent on radio—RADIO! Would you believe it, this is the first time in two weeks he has taken me out for a ride? I sit home every night alone, finally go to bed alone. Heaven above only knows what time *he* gets to bed. Hardly a night passes but what some lunatic like himself comes tramping through the house, his expression like a man going to be hung, puffing and grunting as he lugs a heavy metal box which knocks holes in the wall paper before he sets it down. I know that expression from long experience—the *thing* won't *work!* Then, all night long I hear nothing which is understandable in their constant jabbering as my *master mind* of a husband tortures the thing into horrible howls and squeals which almost drive me mad. I will say this, though. Sooner or later (and I always hope sooner) the howls and excited chatter stop, and our visitor grabs the 'thing', tears madly out the door with it under his arm, shouting fervid thanks over his shoulder, leaving the door wide open, and me to mop up his dirty foot marks along the front hallway, and figure how to fix the wall paper so it won't show so bad. If no one comes during the evening, then the phone is forever ringing, always for *him*—never for me. And always before he hangs up he will say: 'Well try that and if it doesn't do the trick bring it up some evening'. Yes sir, he is known far and wide as the world's champion fixer. No customer pays him anything, and they all go away deliriously happy. My front porch has two cracked windows—he has been going to put in new glass for the last four years. The

washroom faucets have been leaking so long, no amount of scrubbing with Dutch cleanser will remove the dark brown stains from years of dripping on the wash basin enamel. The back door will not close properly. The draft each winter is terrible. His cigarette lighter won't work; I have been buying matches for him for over a year. Several months ago he removed two tubes from our broadcast radio to put in some fellow's 'thing'. One of these days he is going to put in a couple of tubes for me. And—if you can't hear the rattles in this car you must be stone deaf. Well—one of these nights, I too am going to rush madly out the door carrying a metal box, but it won't be one of those radio things; it will contain all our Savings Bonds, our Fire and Life insurance policies, and I will look over my shoulder, to see that the fire I set to the house is burning merrily, and hurry through the night grimly muttering: *'See if you can fix that, Mr. Miracle Man'*".

Case History No. 3

She sat alone in an easy chair, her hair snow white, eyes a deep blue. She must have been lovely in her youth, now she was nearly 70 years old. Her face belied her age, but her hands did not. Tiny hands, with transparent shiny skin, through which showed a tracery of thin blue veins. She answered my question slowly, in a low voice:

"Well, my husband has been in radio a long time. Shortly after we were married 44 years ago he became interested, but it was not until about seven years later that he got his license. It has been his sole hobby ever since; it has kept him happy in his own home with me. Although I never have taken an active interest in ham radio, we have both, nevertheless made scores of lifelong friendships down through the years. On and off through the years he would take a notion to build a phone transmitter, about once every ten years he does that, and then I would be able to talk to other men's wives all over the continent. I got to know some of those ladies so well, they would send us various gifts from time to time".

Her eyes left my face, and gazing at her hands folded in her lap she continued:

"But, to tell the truth, on the whole, there have been many, many lonely years. You see he spent many years sending and receiving messages; traffic handling by code. This kept him very busy, often into the early morning hours. It seemed that the harder he worked, the more such work piled up, calling for still greater effort.

"It finally got to be too much for him as the years passed, but when he was intensely active on traffic, periods when I would hardly ever have his company—only at week-ends, I would often glance through the copies of the delivered messages which he had left on the phone table in the hall. Nearly all of them had the same things to say, and how hard my husband had worked to let these people know that someone, somewhere, loved them. Most of the messages dwelt upon love and affection, and sometimes a message would tell someone else, in some distant city, how—lonely—they were". . . .

The low voice stopped. As that white head slowly dropped in silence I saw a glistening tear splash down on the broad old fashioned wedding ring I had placed there 44 years ago. Then the tears jostled each other across my vision, anxious maybe, to see what was troubling my heart, as I silently thanked my God for blessing me with such a woman for my wife. ■

for that mobile rig . . . a

Transistorized Power Supply

Earl Stowell,
Box 773, Arcadia, Calif.

Inherently, transistors promise a major revolution in electronics. Don't dispose of all of your vacuum tubes just yet, however, for that revolution is taking a bit more time than was anticipated in some quarters. The problem is far more complex than making a few circuit and voltage changes, throwing away your vacuum tubes, and inserting the shiny new transistors.

This is particularly true when the end product is meant for air-borne applications such as missile instrumentation and guidance systems. Here, units must not only withstand extremes of temperature (from way way below that in the deep freeze to above the boiling point of water) as well as shock, vibration, salt spray, 100 per cent humidity, and pressures reduced almost to vacuum, but they must operate to specifications under combinations of these conditions.

For several years, The Rheem Electronics Laboratory of Downey, California has been developing and producing transistorized units for such applications. One of the most recent to go into production takes an input of 20 volts d.c. and, without the use of moving parts or vacuum tubes, delivers an output of 200, 250, or 350 volts of d.c. at up to 150 ma. By changing the turns ratio on the transformer, this power supply could be adapted to an input voltage of 6 or 12. Such a supply, with its efficiency of more than 80 per cent, would find many mobile applications.

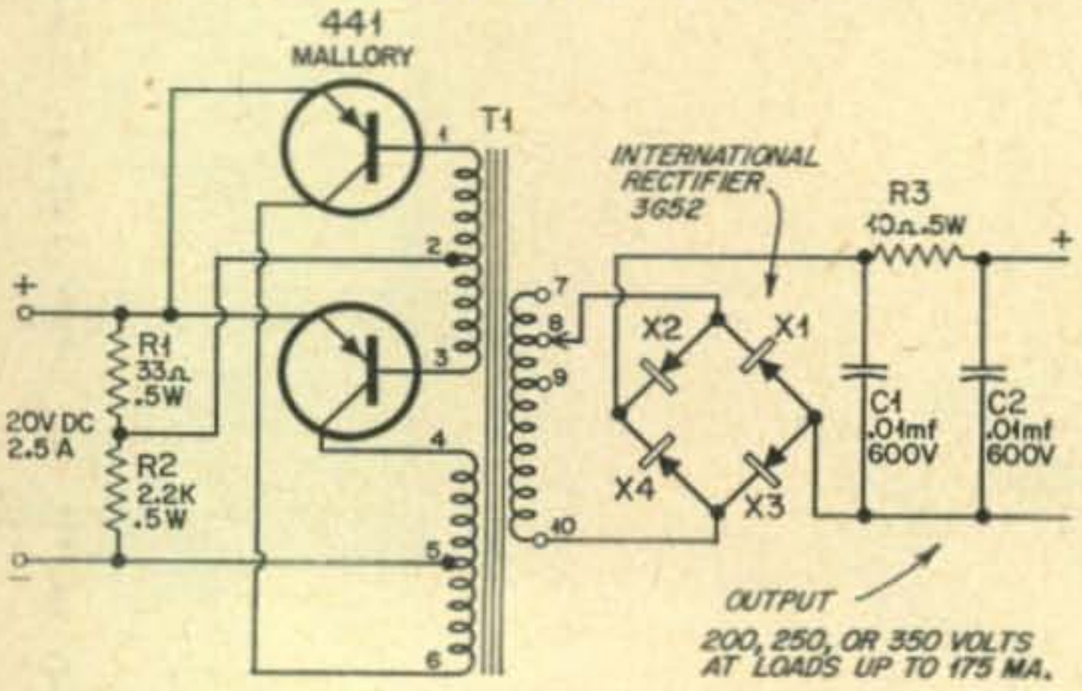
The photographs of the unit were taken of the prototype model at the end of the development period. The production model will feature certain physical changes to enable the unit to meet shock and vibration requirements as well as to improve the general appearance.

In the circuit employed two power-type transistors are used as switches, permitting the input current to flow first through one half

25	Voltage Output (Input 20 volts dc)
Output in ma.	
50	360
85	350
110	340
120	338
140	330
150	320
	310

Note extremely high efficiency which exceeds 80% at medium load.

Schematic and load chart.



Parts List

R1—33 Ohms, ½ Watt Carbon Resistor
R2—2200 Ohms, ½ Watt Carbon Resistor
R3—10 Ohms, ½ Watt Carbon Resistor
C1—0.01 Ufd 600 V
C2—1. Ufd 600 V
T1—Torroid Transformer Core; Spiral, grain-oriented, ribbon, Deltamax
1 to 3, 10 turns #20 wire C. T.
4 to 6, 60 turns #18 wire C T
7 to 10, 580 turns #23 wire tapped at 330 and 431 turns
X1, X2, X3, X4—Diode rectifiers, International Rectifier Company, Number 3GS2.
Transistors — Mallory 441.
Regulation with tap set for 350-volt output

of the primary and then through the other half. Switching voltage is applied to the bases of the transistors alternately from opposite ends of the switching winding (1 to 3).

A special torroidal transformer employing a grain-oriented ribbon-wound Deltamax core is used to keep the leakage reactance low and to provide proper switching characteristics. The voltage output at the secondary is an exceptionally clean rectangular wave.

Four silicon diodes in a bridge circuit provide high-efficiency rectification. C1 is an r-f filter. R3 is a charging current limiter. C2 provides sufficient filtering so that output ripple is reduced to 1 per cent or less of the output amplitude.

In use, this power package is frequently used with a separate series-resistance type of regulator which provides an output regulated to within 0.01 per cent in addition to reducing ripple by at least 66 db.

Three features of this power supply are of special interest. The first is that short circuiting the output of the power supply will not damage the unit, since this simply stops the switching action.

Second, early power supplies of this type had a bad habit—failure to resume switching after a short circuit was removed or failure to start switching when primary power was applied. The tap between R1-R2 supplies a starting bias to the transistors. This assures ready starting of the switching action and prompt resumption of switching after a short circuit is removed from the output. An additional advantage of this bias circuit is that it eliminates the need for matching transistors.

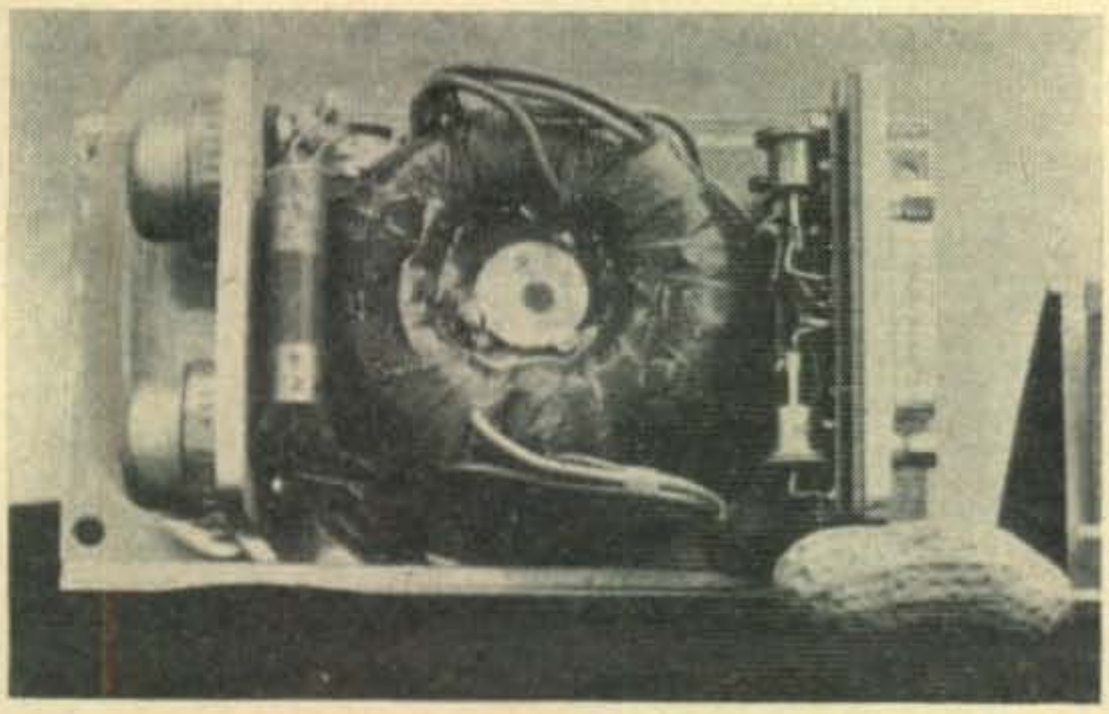
The third feature is that of partial self regulation with varying loads. Reference to the figure will show that the output voltage change is only 22 volts (actual measurede change was from 338 to 360 volts) with a change in output current from 110 to 25 ma., a current change of more than four to one. This is the result of the change in switching rate with a change in load. The switching frequency changes from approximately 600 to 2000 cps with load changes within the range shown in the figure.

A word of caution to those who want to experiment in this field. Be sure that your transistors are rated at more than double the input voltage. Also, your transformer must have extremely low leakage reactances and the transformer output should work into practically a pure resistive load.

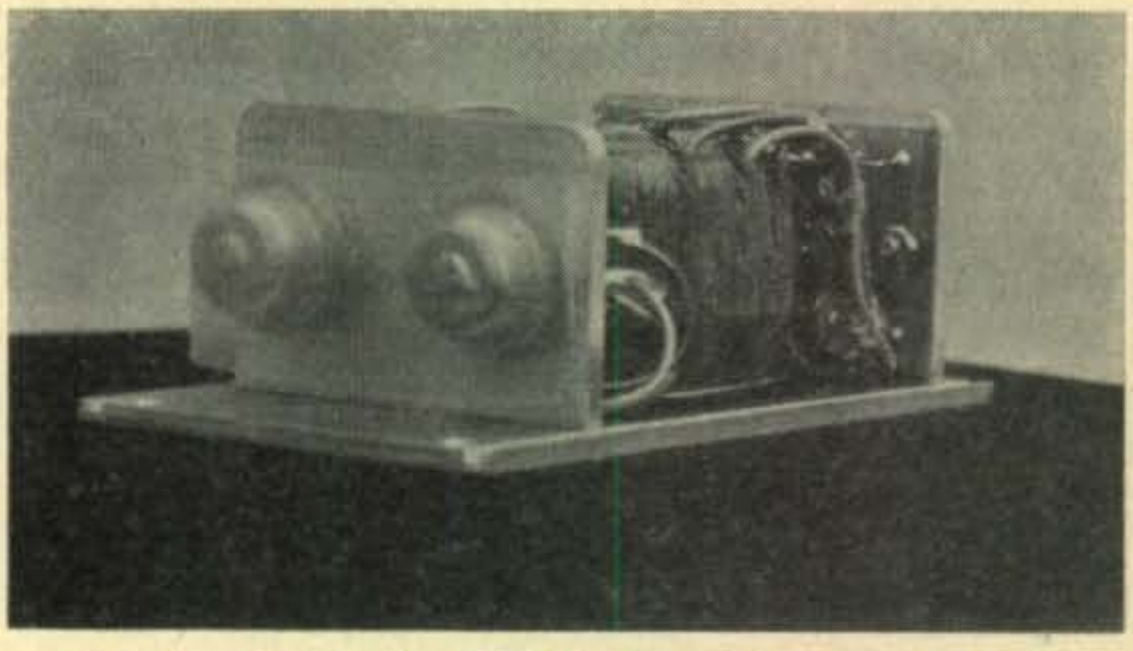
Over-all size of the unit shown is 1¾" x 2⅝" x 4½". Weight with the cover (not shown) is only 17 ounces.

Recent life tests on transistors indicate that this unit should operate at full load in excess of 4000 hours without maintenance of any kind. ■

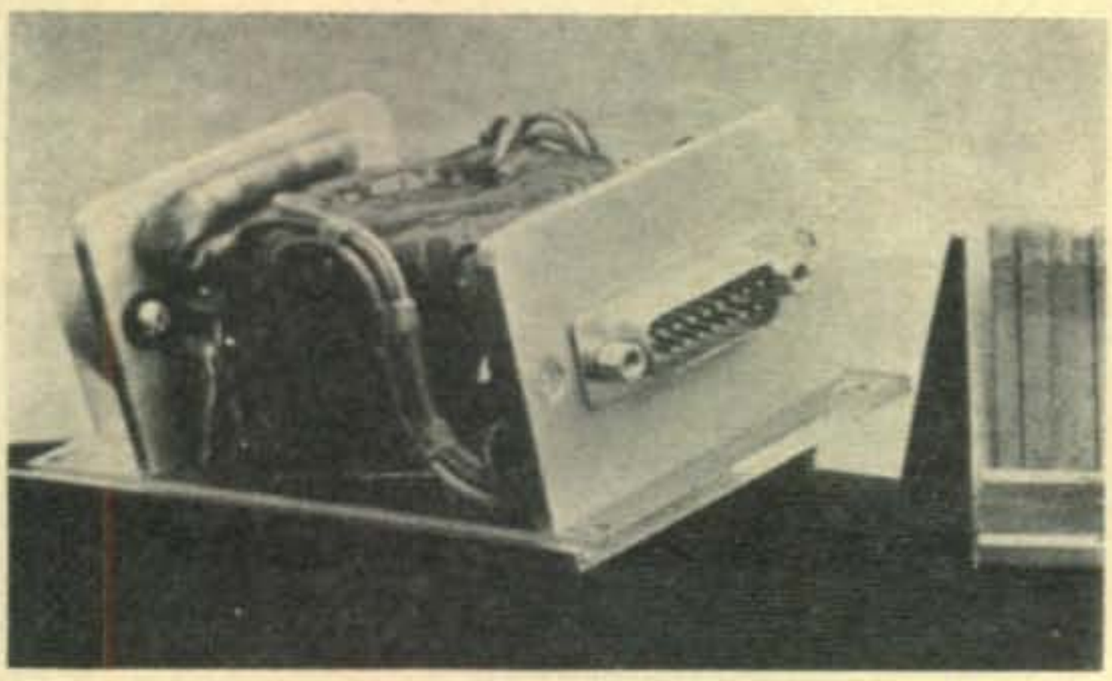
NOTE: This unit was developed by H E T Gowen, Project engineer, REL Product Group, directed by R Bayne.



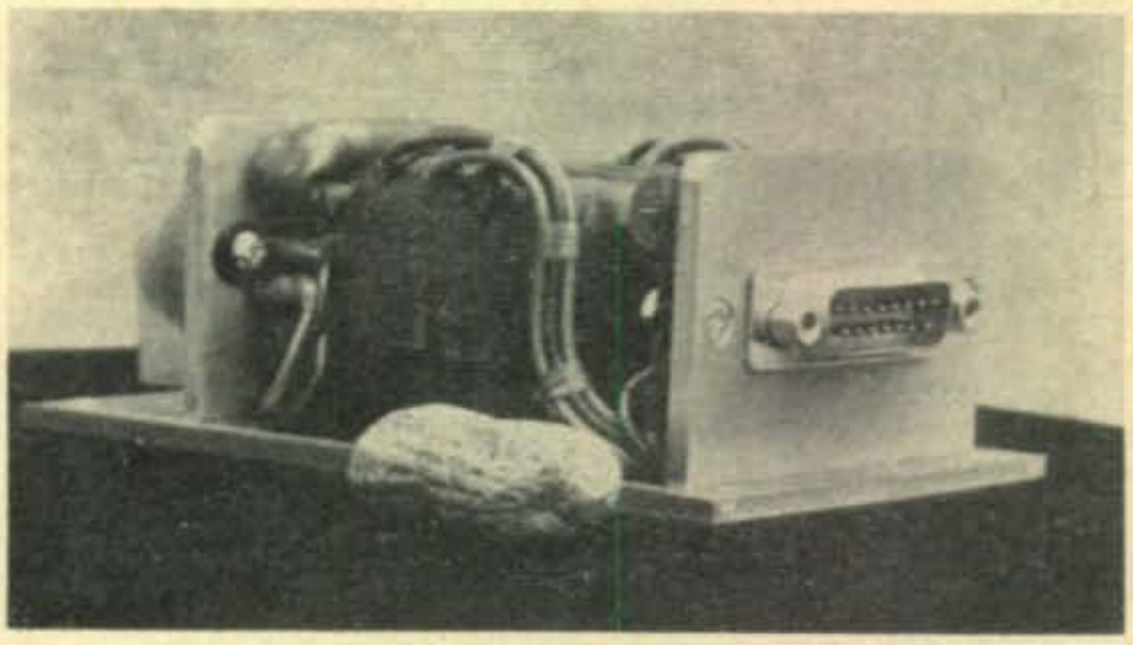
Top view. Power transistors are at the left. Diode rectifiers are to the letf of the plate holding the connector. Size is compared to a medium-sized peanut and safety matches.



Rear and right-hand side. Large buttons at left are power transistors.



Oblique view. Size is compared to safety matches.



Right-hand and front view. Shows connector, transformer, and transistor at rear. Size is compared to medium-sized peanut.

This article is mainly aimed at the amateur who is just beginning to learn a bit more than the basic part of radio theory. There is many an amateur who, though he has passed his general exam, still has the desire to learn more. To him, this article will show how certain principles may be adapted towards a constructive objective. See also WØLMB's article in the July, '57 issue.

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Albany 5, New York

Antenna Impedance

Much has been written and published on the various methods of obtaining the proper match between feed-line and antenna. Bridges have been designed to obtain the optimum S.W.R., yet it all reduces to the fact that the amateur must go through a long session of cut and try adjustments. Then, when the amateur has his known line finally reflecting a low S.W.R., he is able to say the line is matched to the load. In this he is correct. But in this series of adjustments the load has been sadly neglected. Yes, it has been—in that most published material an approximation is given and the amateur builds his system based on this approximation.

The input impedance of a theoretical dipole in free space is approximately 73 Ω. This presupposes ideal conditions, the Perfect Antenna in Free Space—an obvious impossibility. Also the average QTH of an amateur has trees, shrubbery, a house to protect gear, power and telephone lines to said house, and finally a tall metal pole to which the XYL is graciously permitted to attach a clothesline. From the foregoing, it can be seen that the term "free space" as applied to wave lengths is a practical illusion especially in the lower frequency bands.

The impedance of our actual dipole now will depend upon its height above ground and upon its location in reference to the aforementioned objects. These are factors that vary with each location, factors whose exact effect cannot be easily calculated or anticipated.

Yet, if the amateur could reach the input terminals of his dipole as it hangs in its actual position for use and make a direct connection to them with an Impedance Bridge, he would then be able to measure it and come up with the necessary figure or value of impedance to be matched. The rest of the task would be easy. However, Sky Hooks are not readily available even on the surplus market. There is a method to solve this seemingly difficult (?) problem.

There are readily available certain tools by which an amateur can determine the actual input impedance of his antenna from the ground. These are the ¼ wave co-axial or parallel line linear transformer and a simple R. F. Impedance Bridge.

Resonance

There are, of course, several basic requirements to be met. First, the Antenna must be resonant at the design and test frequency (A). For only under this condition will the antenna present the effect of a pure resistance at its input terminals. This resistance will actually be the sum of two resistances in series: the ohmic resistance of the wire itself and the radiation resistance of the Antenna. The ohmic resistance is so small, for No. 12 wire at 3.6 mc it is approximately 0.13 Ω, that it can be ignored. This will leave just the radiation resistance to be measured and it will equal the impedance of the antenna.

Secondly, a ¼ wave length line is needed. This must be the electrical equivalent of a quarter-wave; meaning, for the sake of clarity, that the frequency and the velocity factor of the line must be taken into account. The frequency naturally will be the same as the resonant frequency of the antenna under test (B).

If a ¼ wave length line is terminated with a pure resistance, i.e., a non-inductive resistor or resonant antenna, it will reflect back to its input end a certain resistive impedance. This impedance will be equal to:

$$Z_{IN} = \frac{Z_0^2}{Z_R}$$

Where Z_0 is equal to the line impedance
Z_R is equal to the Terminating Resistive Impedance (Resonant Antenna)
Z_{IN} is equal to the input impedance as can be read with an Impedance Bridge

The above formula is another form of the familiar equation, $Z_0 = \sqrt{Z_{IN} \times Z_R}$ this being the form most amateurs use, the terms being the same as above.

Now the average amateur does not like to do a large amount of calculating or the plotting of these values. The very young ones would also find it quite difficult as many of the newcomers to amateur radio haven't been exposed to the extraction of square roots as of yet. Also, said amateur has no desire to try electrical ¼ wave lengths of the various types of concentric and parallel lines.

So here in Figure 1, are presented a series of curves which cover a number of the common commercially available line impedances.

The amateur may use any one of these he chooses, as long as it will cover the expected approximate load impedance. Then from the bridge reading, he can determine the Antenna Impedance. He now has the necessary information to design or buy the properly matched line back to the transmitter. Also, he will know if his transmitter can be directly matched to the load. He has the opportunity to pick or choose what load he wants to present to his transmitter and/or tuner.

The amateur by this relatively short test has made the major step towards the most efficient transfer of r-f power to where it can be put to its proper use—the Antenna for signal radiation.

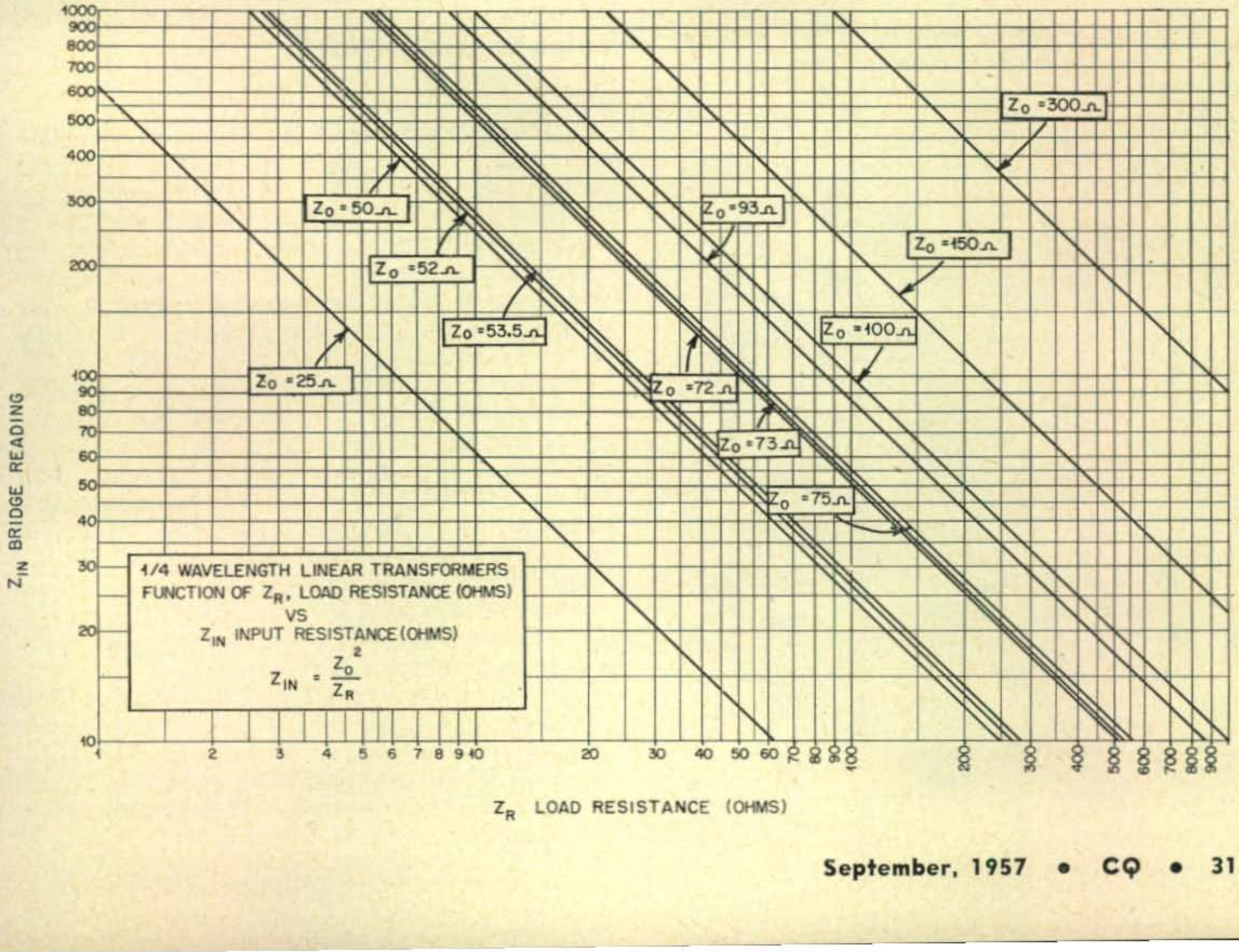
These curves cover quite thoroughly the complete range of Antenna Impedances likely to be encountered in amateur antenna work—from 0.625 Ω for a vertical mobile antenna to 18,000 Ω for a horizontal end fed antenna several wave lengths long.

From the above, any amateur may now make an intelligent approach to the solution of the proper line between his shack and his Antenna, with the minimum of effort and the maximum transfer of energy, and perhaps better DX or satisfying QSO's through QRM es QRN. ■

(A) The use of an R.F. Impedance Bridge presupposes a Grid Dip Meter. With a G.D.O. the curious amateur may resonate his antenna to the design frequency. This is the length (FT.) is equal to $\frac{468.}{Fmc}$ This was the formula used and only four inches had to be pruned from the total length to make it resonant. During this process the antenna was suspended 4 ft. above the ground. The only precautions taken were to use lots of rope at each end—one tied to handle on the garage door and the other over top of car to front bumper. This was done to avoid end effects, when suspended in the air, it still resonated at the same frequency.

(B) The Quarter wave length of transmission line is derived from the formula $X = \frac{300,000}{Fkc}$ or a quarter wave section is equal to $\frac{75,000}{Fkc}$ VF where VF is the velocity factor of the line to be used.

Fig 1.



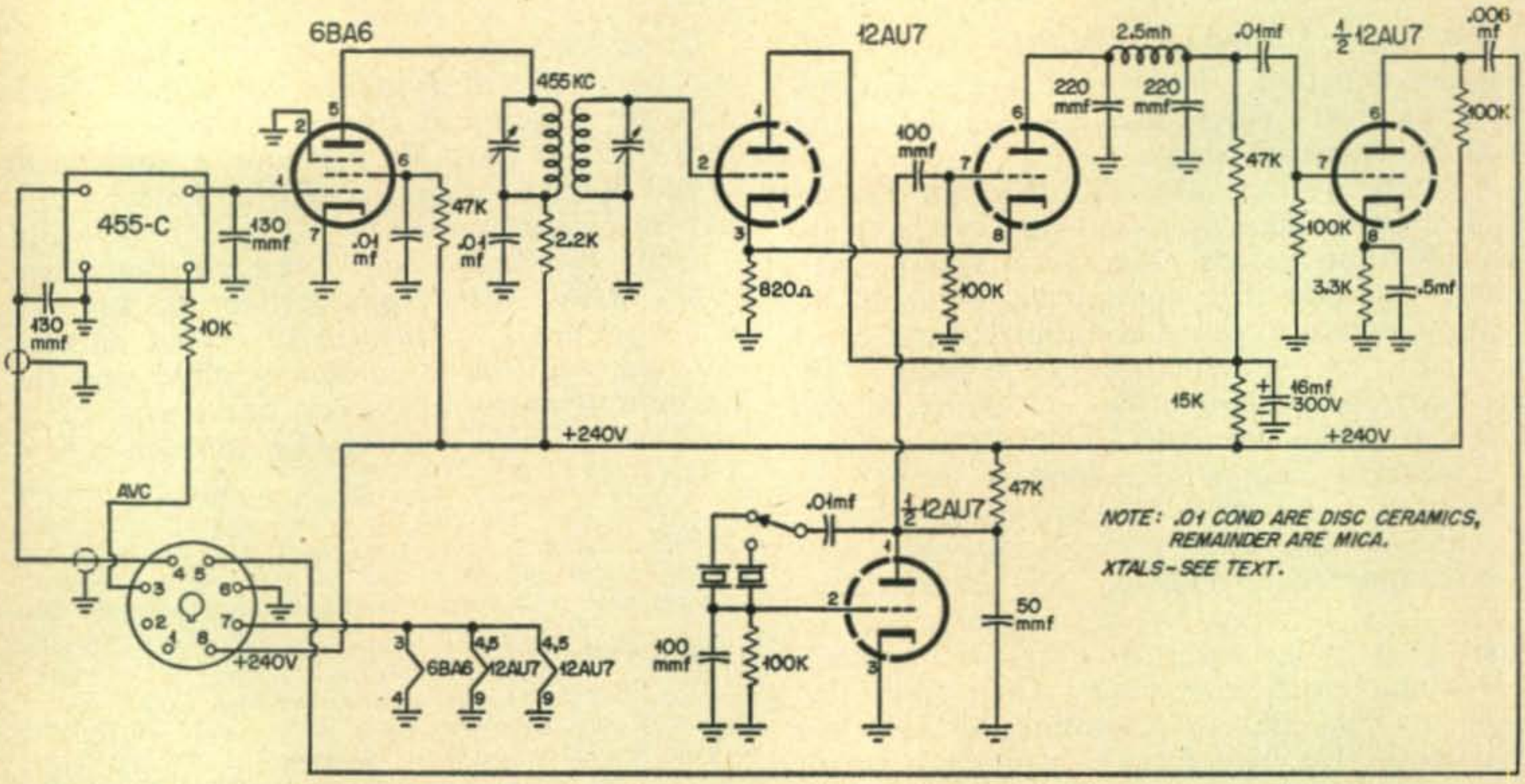
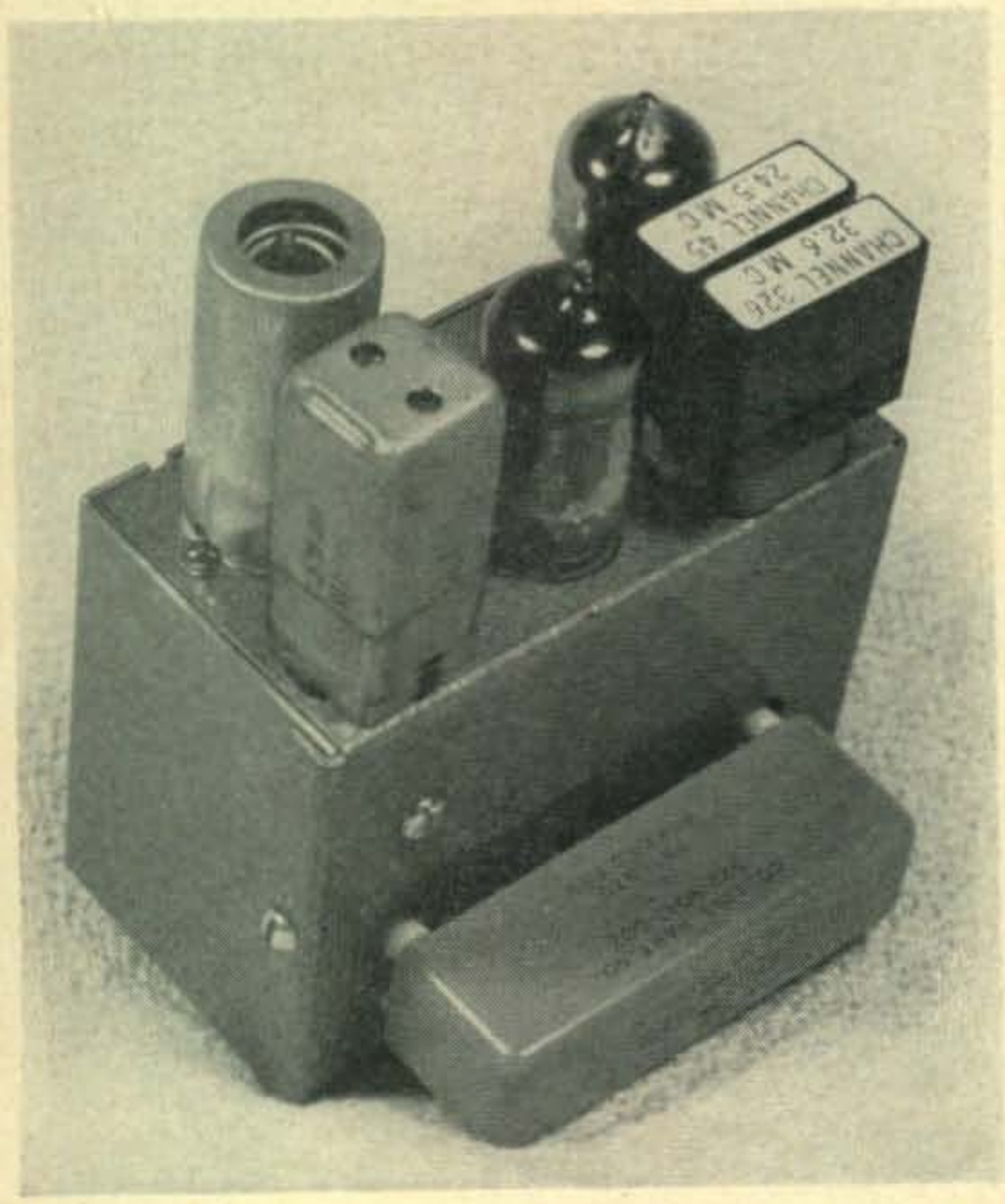


Fig. 1. Schematic of the W6JPU SSB Adapter. Conventional circuitry is used throughout and components are standard. Adjustment of trimmers on the IF transformer is the only tuning required. A crystal oscillator BFO is used to maintain oscillator injection at constant points on the slopes of the Collins Mechanical Filter.

the W6JPU Sideband Adapter

Fig. 2. Side view of the W6JPU SSB Adapter showing the Collins Mechanical Filter.



Ralph Saroyan, W6JPU
3639 Mono Avenue
Fresno 2, California

Splendid results from a homemade mechanical filter single sideband exciter fathered thoughts of an equally satisfactory mechanical filter adapter for receiving. While the homemade signal slicer has done yeoman service for many years a mechanical filter device was still appealing. It would be even more so if it were designed to plug into the receiver without receiver modification.

Eyeing the HRO-50 receiver for possible space to install such a device, the NFM socket at the rear of the chassis appeared to have possibilities. It will take an NFM adapter, why not an SSB adapter? The HRO schematic was consulted. Sure enough, here were outlets of everything needed. Output from the last i-f stage, input to the audio system, filament and B plus voltages were all brought out to pins of the accessory socket. What's more there were two spare pins for future expansion!

The schematic further revealed that an SSB adapter plugged in at this point would work into the mode switch on front of the HRO. Instead of NFM, exalted carrier reception would be available. For normal AM reception or to

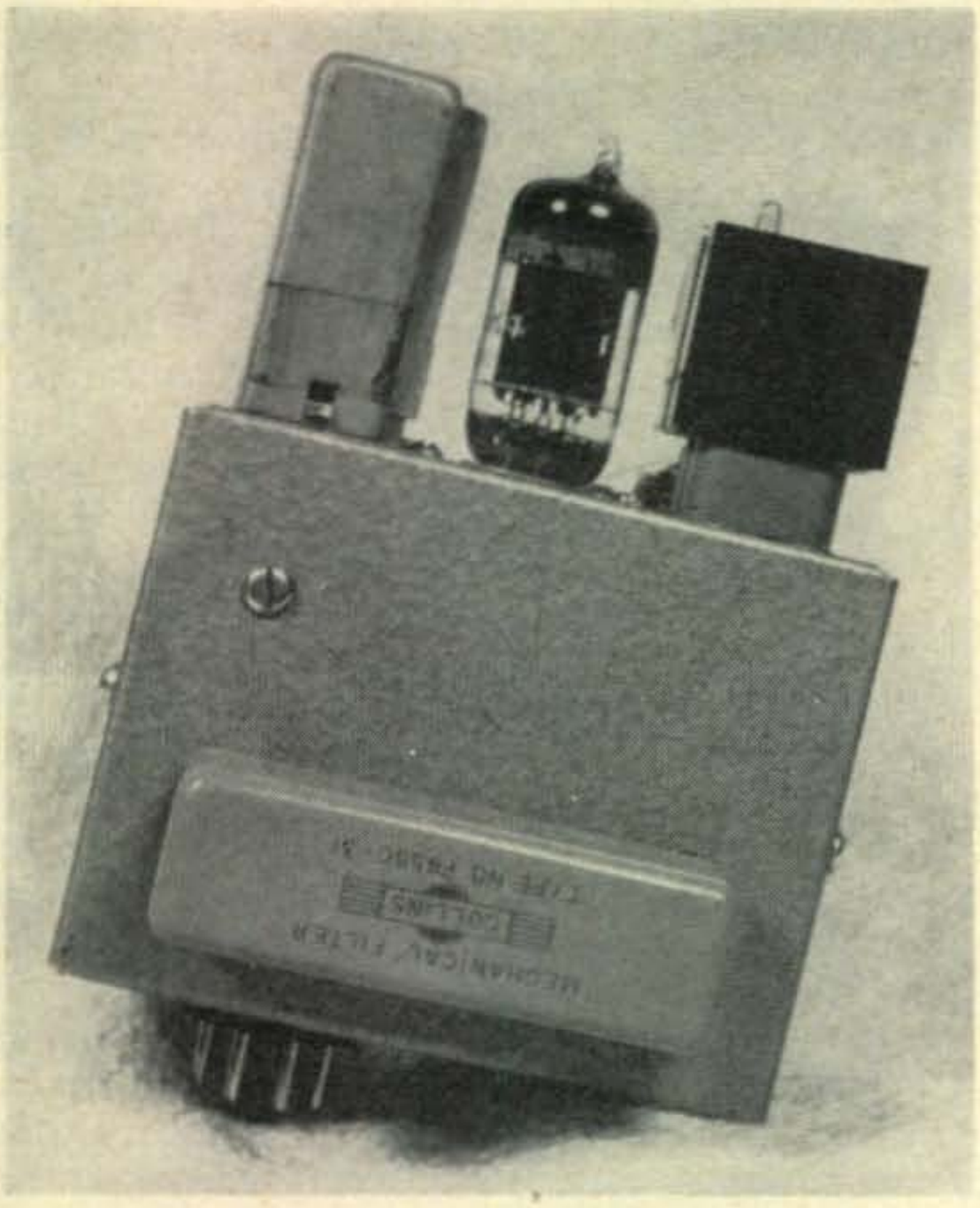


Fig. 3. Top side of the W6JPU SSB Adapter.

copy CW in the conventional manner, the mode switch need only to be put in the respective position. This will be living!

No circuit modification need be made to the HRO. No holes need be drilled in the chassis or cabinet. With an SSB adapter plugged into that NFM socket the receiver would truly become versatile in its operation. Now by a flip of the switch, SSB signal could be copied with full AVC action, or the action could be reduced by setting the r-f gain control. This should be of equal interest to AM and CW men for a number of reasons.

The AM man would find this kind of reception invaluable in eliminating heterodynes from adjacent channels. He'd also find it excellent as a means of removing distortion fading. As though these were not enough, there's that additional bonus of noise reduction achieved by cutting the listened to portion of the passband in half.

In CW reception it would be excellent. Controlled AVC action would hold fading signals steady. By copying either the upper or lower sideband of a CW signal absolute single signal reception would be achieved. The lower noise due to reduced passband would also be helpful.

Circuit

To keep this long story down to book length, the circuit was devised as shown *fig 1*. It is perfectly conventional, using a 6BA6 i-f amplifier, a 12AU7 mixer and another 12AU7 as a combination crystal oscillator and audio amplifier. The *Collins* Mechanical Filter is between

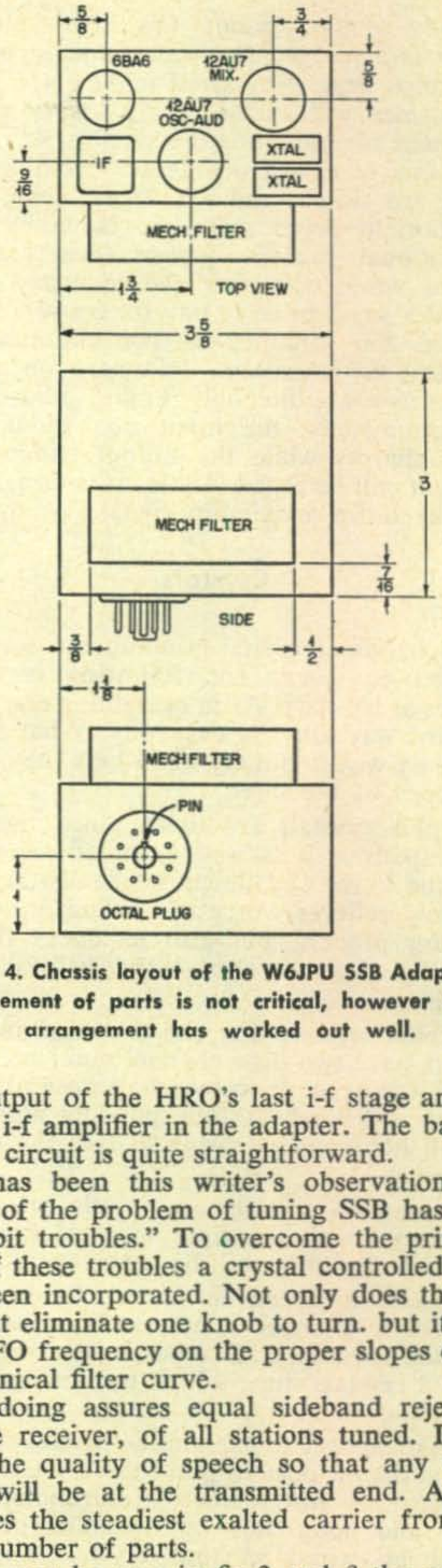


Fig. 4. Chassis layout of the W6JPU SSB Adapter. Placement of parts is not critical, however this arrangement has worked out well.

the output of the HRO's last i-f stage and the 6BA6 i-f amplifier in the adapter. The balance of the circuit is quite straightforward.

It has been this writer's observation that much of the problem of tuning SSB has been "cockpit troubles." To overcome the principal one of these troubles a crystal controlled BFO has been incorporated. Not only does this expedient eliminate one knob to turn. but it fixes the BFO frequency on the proper slopes of the mechanical filter curve.

So doing assures equal sideband rejection, by the receiver, of all stations tuned. It also fixes the quality of speech so that any variations will be at the transmitted end. Also it supplies the steadiest exalted carrier from the least number of parts.

As may be seen in *fig 2* and *3* the adapter is housed on a 2" x 3" x 3⅝" locking type *LMB* SL135 chassis. A type 8PB *Cinch* Jones plug, installed on the bottom of the chassis makes connection between the adapter and rereceiver when plugged into the NFM socket. On top side of the chassis are mounted tubes, crystals and the one i-f transformer. The *Collins* Mechanical Filter is mounted on the side, via two *Millen* type 33302 crystal sockets and

carefully aligned phone tips. The i-f transformer is a midget that was found in a piece of surplus gear. Any good midget 455 kc i-f transformer will suffice. 8N9t *Vector* sockets were used for mounting the small parts.

Chassis punching details are given in *fig 4* which are simple and self explanatory. Some reduction in depth might be made by using conventional sockets. *Vector* sockets are so easy to work with that the increased depth seemed a small price to pay for convenience.

Since the circuitry is conventional little comment is necessary. Trimmers on the i-f transformer are the only tuning adjustments. The trimmer on the input side should tune rather sharply while the output trimmer adjustment will be broad. These, of course, should be peaked for maximum signal.

Crystals

Old hands at crystal grinding can stop here and get to work. The following is for us novices at lapidary. As in everything else there's the hard way and the easy way. What follows is an easy way to put crystals where they belong on slopes of the filter.

Surplus crystals are used. Since these are so inexpensive it is well to order several for both the lower and upper sidebands. So doing not only relieves worry of ruining one in the grinding process, but also enhances the opportunity of getting crystals that will fall in the right places.

Surplus crystals that are mounted in black holders have two digit channel numbers. Channel 45, for example, comes very close to hitting the low sideband. A little padding across the crystall holder might bring it onto the desired frequency.

Channel 46 crystals are a little too low in frequency to hit the right spot for the upper sideband. Grinding will be necessary.

Crystals mounted in brown holders have three digit channel numbers. For the lower sideband Channel 326 comes very close. Channel 328 crystals come a little too low and must be ground in.

It takes longer to explain the crystal grinding process than it does to grind the crystals. Tools necessary are just a small carborundum stone stone and long nose pliers. The oscillator should be wired so that crystals might be tested in it.

With these at hand, remove the crystal from its holder. Grasp it with the long nose pliers and run the carborundum stone over the top edge with a couple of light strokes. Be careful not to break the small wires which connect the crystal to the holder base.

Now plug the base and crystal into the oscillator socket and see how far it has moved. If the frequency remains unchanged, turn the crystal in the pliers 90° and run the carborundum over the top edge in a couple of light strokes. Check the crystal again to see how far you have moved its frequency.

Determining how far to move crystals can be accomplished by at least two methods. The first is the most accurate, while the latter is simpler and might be more pleasing to the ear.

A curve of the skirt selectivity comes with each *Collins* Mechanical Filter. The exact spot, frequency wise, to put the crystal can be determined by studying the curve. Once this frequency is determined, grind the crystal to this frequency and one sideband is taken care of. Repeat the process on the other slope of the curve and grind accordingly and you have both crystals precisely where they belong.

The simpler method is to rely entirely on your ears. Plug in the broadcast band coils and tune in a station that is broadcasting music. This should first be done with the receiver in the conventional AM reception mode. Plug a crystal into the oscillator and turn the mode switch to NFM. Now retune the station to the point where it sounds like regular AM reception. If the crystal is in the proper spot, music will sound just the same as in the AM position.

If the music sounds too bassy the crystal is too far up the curve of the filter, its frequency is too high. Should the music sound too tinny and have too little bass response the crystal is too far out on the curve of the filter, its frequency is too low.

Sideband selection

In its present configuration no provision has been made to switch sidebands. A switch is shown in the schematic, but it has not yet been incorporated since plans are in the mill for a small relay to do the job. Currently sidebands are switched by changing the positions of the crystals from the wired in crystal socket to the unwired socket.

The adapter pictured in *figs. 2* and *3* has been in operation at W6JPU for over three months. Its performance is everything that was anticipated and is well worth the small amount of effort required to put the adapter together.

AVC action on SSB signals is excellent. Round table discussions participated in are listened to without touching the gain controls, once set. This makes listening a pleasure while working on the bench across the shack.

Best AVC action is achieved by setting the r-f gain control to the point where weak signals are at a comfortable level. The AVC takes care of S9 plus signals and brings them all down to size.

This adapter will work equally well on the HRO-60, HRO-50T1 and the HRO-50. With some modification in plug in arrangement it should perform satisfactorily in other makes of receivers having 455 kc i.f.'s. ■

A Simple R-F Powered

Transistor CW Monitor

Bill Hamlin, W1MCA
CBS-Hytron,
Danvers, Mass.

An r-f powered transistor c-w monitor is a simple and easy way to provide c-w monitoring at the receiver either with or without a direct connection to the transmitter. It is powered by the rectified transmitter signal, so that it is also a check of transmitter output. Failure of the transmitter will cut off the monitor power. Because of the high gain of the transistor used, it will oscillate with very low d-c voltage applied thus reducing the r-f power required to a very small value.

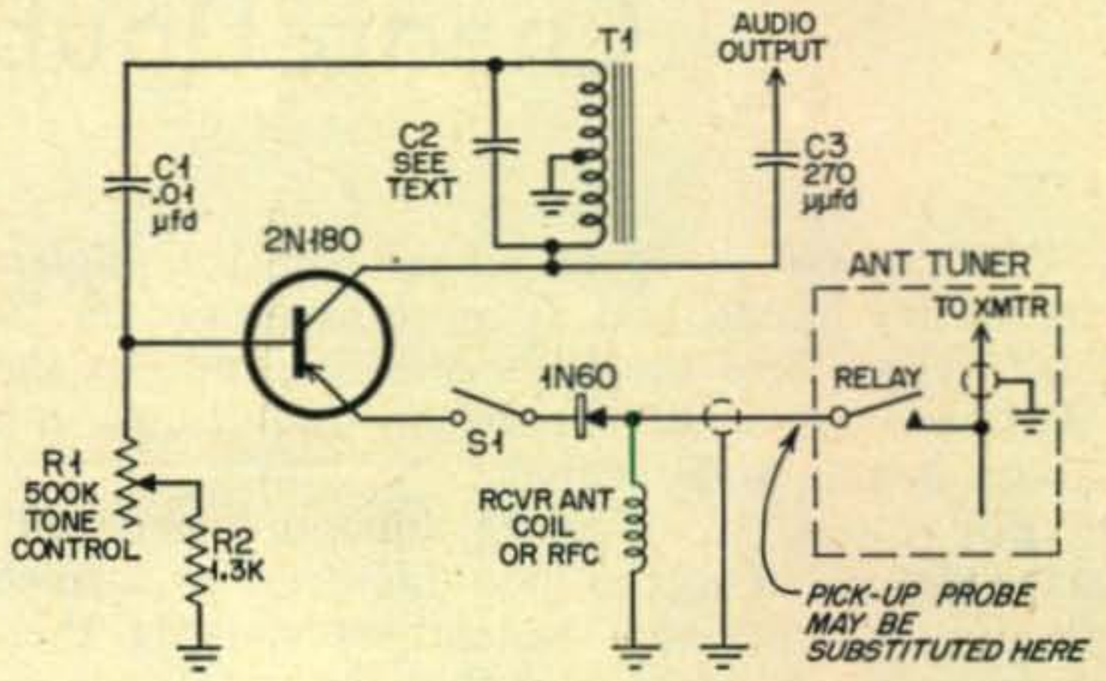
An additional feature is the monitor's pleasing note which may be varied from 500 to approximately 2000 cycles per second.

Can be Built-in

One of its best features is that it may be completely built into your receiver. At my station, the r-f power to operate the monitor was obtained from the receiver's antenna line, this being coax connected to the antenna relay. When the transmitter goes on the relay opens so that it becomes a high impedance pickup probe connected to the receiver input. Pickup by this method is sufficient to develop up to several volts d.c., depending upon the transmitter and receiver adjustments. One-half a volt is the minimum d-c voltage needed to operate the monitor. If the voltage does not equal this amount under perfect tuning conditions of the transmitter and receiver, a capacity may be placed across the open antenna relay terminals to increase the r.f. applied to the receiver antenna feeder. A ceramic variable trimmer of 5-15 $\mu\mu$fd. capacity should be adequate.

Connection of the monitor across the receiver antenna terminal does not affect reception because the shunt capacity is so low.

Of course, a pickup probe can be substituted for the feeder if it is so desired, but this requires an extra line to the transmitter antenna tuner or transmitter cabinet. When the receiver antenna line is used, the r-f load for the d-c power supply is the antenna coil of the receiver. If a probe-type pickup is used, an r-f choke must be substituted for the antenna coil.



Schematic

The output connection of the monitor may be varied according to the individual's need. In this case, using the NC-183 receiver, when the transmitter is on the receiver is placed on standby. All stages in the receiver are made inoperative except the audio phase inverter and power output stage. Therefore, the monitor output was applied through a small capacitor to the phase inverter input. This required installing a shielded cable from the transistor collector terminal to the phase inverter grid.

Construction

The circuit components used in the monitor are not critical. Most parts will probably be in your junk box. But the heart of the unit is a CBS 2N180 general purpose transistor. This transistor has a base-to-collector current amplification of 60. This high amplification type of transistor will give more output with lower d-c voltages.

The emitter voltage for the transistor is applied through a switch which is on the back of the 500,000 ohm potentiometer. When operating the transmitter on phone where the c-w

[*Continued on page 108*]

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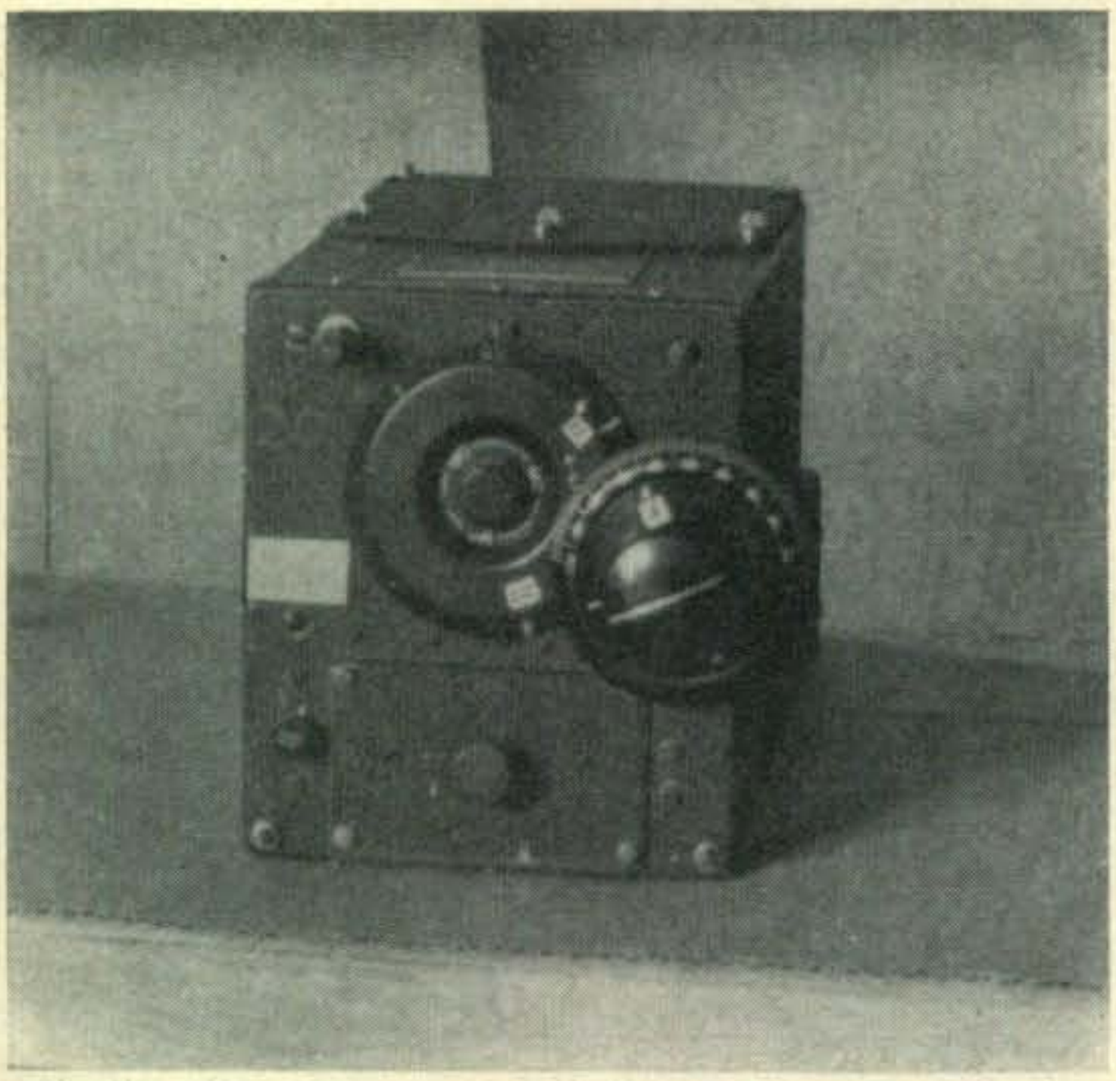


Fig. 1. Showing the tuning dial.

Cheap Double Conversion

With good prospects ahead for the higher frequency bands, and as more hams get on 10 and 15, we hear the boys speaking, not, as the Walrus said, about cabbages and kings, but about beams and receivers.

For many years past, amateurs generally have depended on the manufacturers to furnish them with receivers instead of making their own, and it must be said that the various companies have done a pretty good job. Performance on the low frequencies has been good, even on the low priced models. Above 14 mc however, most of these receivers are lacking in sensitivity and image rejection, so that it has been necessary to use converters or preselectors ahead of them.

In the high-priced newer model receivers double conversion is used, which practically eliminates images and at the same time increases the sensitivity on the higher frequency bands. However, when the Walrus mentioned cabbage, maybe he was thinking about the price of these new double conversion jobs, and the kings who could afford to buy them. Many of us simply cannot do so, and balance the budget. We *do* have our old model receivers, hot upstairs, but not so hot downstairs, and they have continuous coverage from 550 kc to 30 mc or thereabouts. If you are in that class, brother, read on:

The 274N Receiver

Most hams are familiar with the little "Command" receivers, the 274N Series, which are so plentiful on the surplus market. One of them, and only one, the BC 455, has an intermediate frequency of 2830 kc. With a small power supply, capable of giving 24 volts a.c. for the heaters, and 250 volts d.c. or thereabouts for the plates, they may be used without modification on 40 meters, and they make good stand-by or portable rigs.

By rewinding the r-f section they may be used as high up as 28 mc with a surprising amount of sensitivity if the job of rewinding is properly done and the rig is realigned to peak the various stages. Used as a converter, with the 2830 kc output taken directly to a communications type receiver, images are eliminated in the first conversion, while the old receiver takes care of the jobs of amplification, noise limiting, beat frequency production for c-w operation, and audio control.

Tuning

Tuning is done with the BC 455. Band spread and logging dials may be added, concentric with the tuning shaft as shown in the photograph *fig. 1*. The method used here may be explained as follows: To the threaded sleeve which holds the splined tuning shaft in place is fastened a dial scale from a BC 375 tuning unit. This scale has a hole that just fits the knurled outer diameter of the threaded sleeve. The sleeve is first drawn up tight, the original tuning knob removed, and the BC 375 dial forced onto the sleeve with its number 50 pointing directly upward. A skirted knob is then installed on the tuning shaft. The skirt of this knob just comes out to the bottom of the dial scale. Indicating arrows, numbered 1 to 4, are placed 90 degrees apart on the outer edge

of the skirt. By making use of the main dial markings, together with the numbered arrows and the auxiliary dial, stations may be accurately logged at any place on the tuning system.

The BC 455 Command receiver was designed to cover a range of from 6 to 9 mc. It may be converted to cover higher frequencies, at least up to and including all of the "ten meter" amateur band, by simply rewinding the r-f coils with fewer turns. No circuit modification is necessary, nor is it necessary to remove condenser plates.

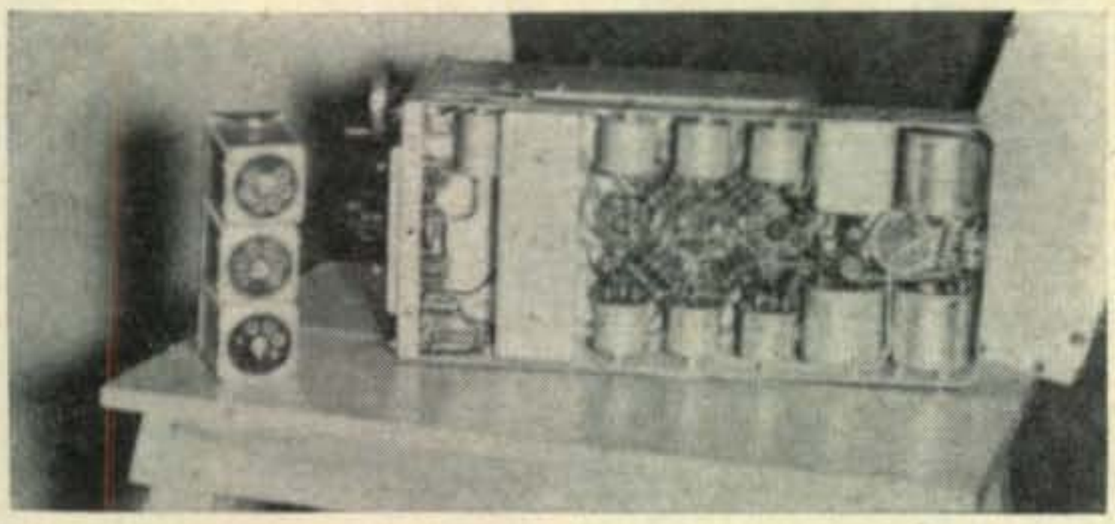


Fig. 2. Underchassis view the r-f coils to the left.

Fig 2 shows one of these receivers with the bottom plate removed. The oblong strip near the left end holds the r-f coil assembly which consists of the three coils mounted on their respective sockets, and three square metal shield cans, as shown in *fig 3*. A complete assembly is shown at the left of the receiver in *fig 2*. By removing two small screws the assembly may be lifted off the small banana plugs which make the connections to the coils. Properly assembled it cannot be plugged in wrong. However, the location and position of the separate coils in the shield cans is very important. To help keep track of these things small dabs of brightly colored paint, known as "witness marks" are located in their proper positions on the shields and coil sockets. I spoke of three coils. Actually, there are five coils, wound on three forms. Two of the coils have resistors attached to one end, and running to another plug on the coil socket. These resistors are left as they are. The coils are designated *L1*, *L2*, *L3*, *L4* and *L5*, and are shown with their respective terminals in the sketch *fig 4*. The coil forms are fastened to their metal socket bases, and they are best left there while they are being rewound. This way, each coil may be plugged into position separately and tested with a grid dip meter if one is available. The coil shields seem to have little effect on the frequency, any difference may be compensated for by the trimmers and the slugs may also be used to peak the coils. Starting with *L1*, remove all but six turns, spacing these turns over about half of the coil form so that the slug will have an effect on the inductance when moved in or out. The inductance of this coil should be such that the little antenna trimmer knob on the front of the BC 455 will be effective at the desired frequency. If it is not, it may be necessary to adjust the turn spacing a bit.

L2 is the r-f mixer coil. It originally has a "honey-comb" winding. Unwind all of it, but be sure to leave the wire long enough so that you will have ten turns to wind back on. These ten turns will later be interlaced in between the turns on coil *L3* so as to provide very close coupling for greater sensitivity.

L3, also a mixer coil, is rewound with six turns, which may later have to be reduced to five if necessary. Space the turns the full length of the coil form, plug it into position in the receiver and test for resonance with a grid dip meter. The tuning dial should be set at the place where you want the band to come. Adjust turn spacing and slug position until the inductance is correct. Tuning the main dial should dip the meter. In this way you can locate where the band edges will come on the dial.

L4. It is not necessary to modify this coil at all.

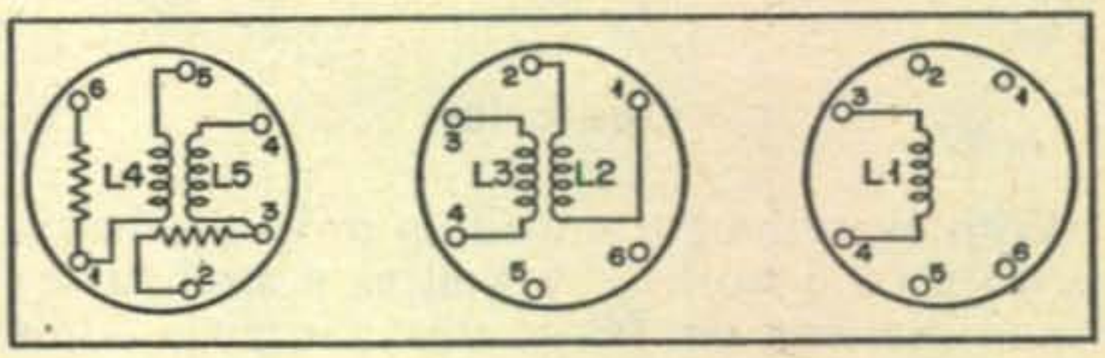
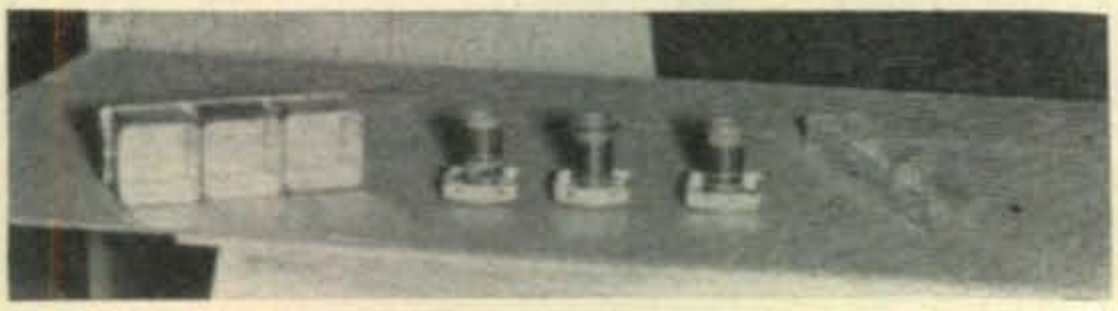


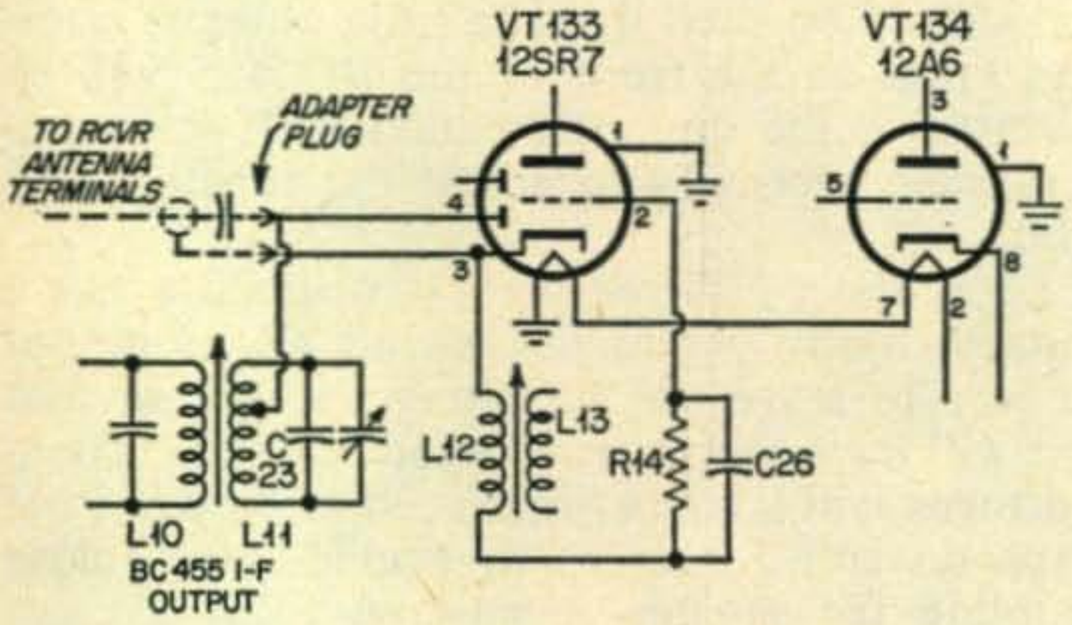
Fig. 4.

L5 should be very nearly a duplicate of *L3*. Start with six turns, spaced fairly close, about ⅛ inch from *L4*. With some adjusting of the slug and turn spacing it can be made to match the frequency of *L3* without much trouble. When re-assembling the coils for trial, use just enough of the little screws to serve the purpose, as it is very likely that you will have them out and in several times. This can be done quite rapidly once you get the hang of it. If a signal generator is available, or can be borrowed, it will help the trimming process. The i-f coil train in the BC 455 should first be aligned for best output. In fact, the receiver should be first tested for correct performance on 40 meters before any changes are made.

Fig. 3. The r-f coils removed from their shield can



A small amount of trimmer adjustment may be necessary to make the receiver work as it should on 40. The i-f transformers need to be aligned but once, but the r-f end will of course have to be re-aligned after re-winding the coils. Trimmer condensers for this purpose will be found at the front of the receiver, top side. Some units have holes in the covering shield



Schematic of adaptor plug.

to allow for their adjustment. If they are not there, better make them. The first two at the left, as you face the receiver dial, are in parallel. One is set either all in, half way in, or all out, and the trimming done with the mate. These tune the mixer coils. A little farther to the right there are two more, also in parallel. These tune the oscillator coil *L5*. At the extreme right there is a single trimmer. This one trims the coil *L4*, and is best adjusted when moved in conjunction with the tuning dial for best overall receiver output.

Operation

With everything trimmed up properly the receiver should work very well as a straight ten meter receiver on fairly strong signals while using headphones. When this has been accomplished we can take up the job of making a converter out of it. This is easily done. All you have to do is to remove the second detector tube, *VT 133*, 12SR7, and make up an adapter plug to put in its place using but two of the pins, *No. 3* and *No. 4*. It is not necessary to remove the audio output tube 12A6, since its heater is disconnected when the 12SR7 is removed. The adapter should be made long, for two reasons; A short adapter would be very difficult to plug into the socket. Also the adapter should contain a small condenser in the lead to pin *No. 4*. An old coil form, large enough to take a plug at one end, and about three inches long would be ideal. The condenser, .001 μfd. could be inside the tubing, with one lead running to pin *No. 4* on the plug. The other condenser lead should go to the inner conductor of a piece of small co/ax cable. Pin *No. 5* on the plug should be connected to the shield of the cable. This cable runs directly to the antenna terminals on the Communications Type Receiver with which the converter is to be used. Set the dial of the second receiver to 2830 kc, fire up both receivers, and you should be in business. You will need a volume control on the BC 455. The b.f.o. won't operate, as you have pulled the tube. Probably the volume control on the second receiver will have to be set pretty low. CW is received by throwing in the b.f.o. in the second receiver. You may find that the noise limiter in the second receiver works much better than it ever did. The "S" meter will read a lot higher. Crystal selectivity filters or "Q" Multipliers will work in a normal fashion. Images will be absent, and the signal strength, as compared to that of the old receiver alone, will be very gratifying.

Caution

It might be well to add a word of caution here; Be sure that the input circuit to the old receiver is not open. These input coils are sometimes wound with a few turns of very fine wire, so small that a good heavy dose of static will open them up. It has occurred, in several cases. Surprisingly enough, the receiver will work to a certain extent even with the input coil open.

The foregoing winding data is given with the assumption that the BC 455 is to be used mostly for ten meters. It is possible to squeeze the 10, 11, and 15 meter bands into one set of coils but it will take very careful adjustment of turn spacing and trimming to get the proper tracking, because the ten meter segment will be at one extreme dial reading and the fifteen meter portion will be at the other extreme end. It is much easier to convert two units, one for use with 10 and 11, and the other one for use on 15 and 20 meters. In the latter case, start with double the number of turns given for the various coils and trim down until the band segments are at the desired places on the main dial. ■

The receiver in the author's shack.

Listen to America

C. M. Stanbury II
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Ontario, Canada

It has long been the claim of the Short Wave broadcaster that through their media one could know the World. By listening to the various English language broadcasts: news, cultural features etc., we in North America can learn of their individual countries.

This is certainly an appealng idea, and a tremendous claim. Unfortunately, in most cases it is untrue. You don't believe me? Okay, here are the facts.

Discounting a handful of Canadian commercial SW broadcast stations which are not usually heard outside the borders of Canada, 80% of the World's English SW broadcasts are sponsored by government agencies. Most of the other 20% are by religious organizations and these tell nothing of the country from which they originate.

Breaking it down still further, approximately 40% come from communist countries and are pure propaganda. I think you will agree that these can be discounted.

And what are the remaining two fifths? No government is going to make broadcasts to foreign listeners disparaging that government's own country. At very best, the broadcasts will play down the defects and up the things that are considered desirable. It is very much like receiving pamphlets from the local chamber of commerce. The picture is pretty but out of it's true setting and probably devoid of life.

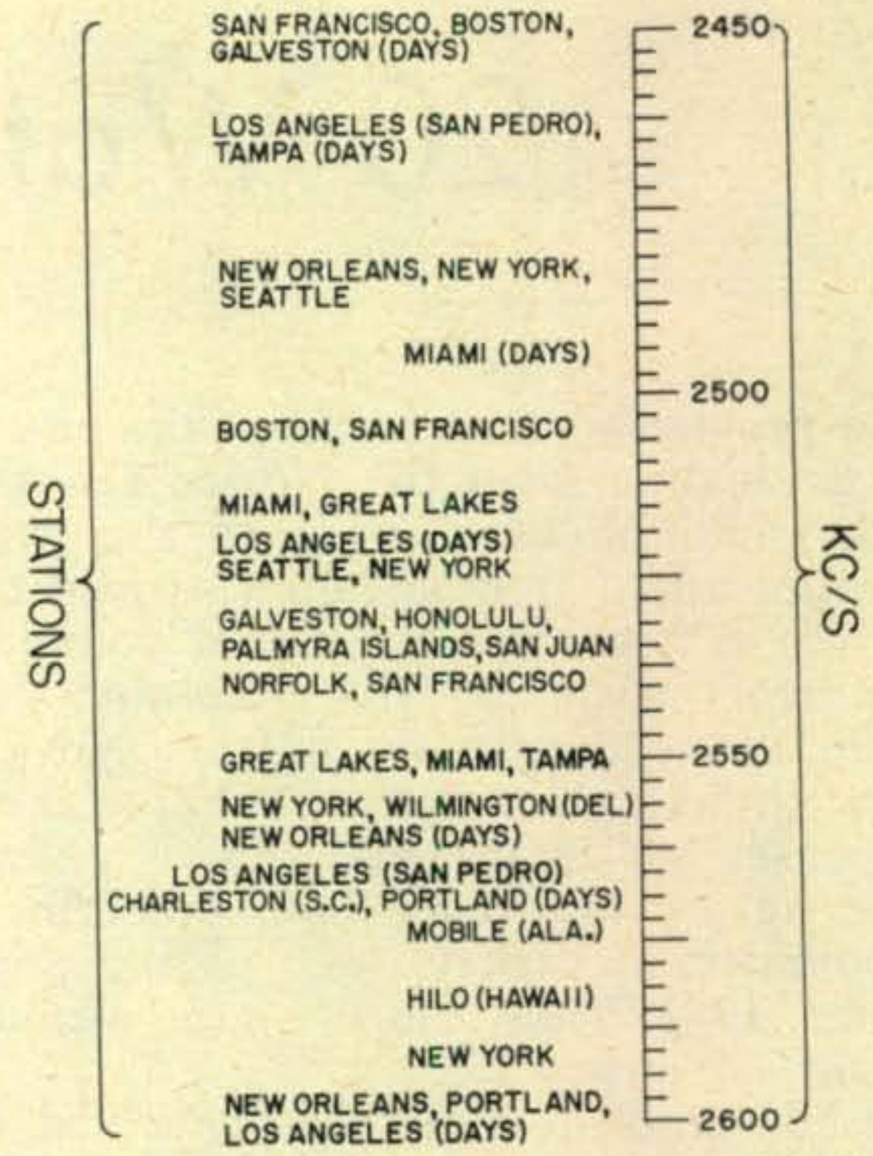
Disillusioned? Then consider this. How well do you know North America? You in the Pacific Northwest, what do you really know about Dixie? And you in New England, what do you really know about the California Coast? (excluding Hollywood etc.) So if far away places interest you, why not start with America?

This you CAN do with radio. By listening to the voices of the people that make up America, you can do it very well. Stating it over simply, tune to the Marine frequencies and listen. There you will hear the voices of many Americans as they go about the routine that makes up there lives. Routine to them but not to the interested listener. And occasionally you will hear something that is not routine to anybody.

Here there voices: uncensored, unrehearsed.

It would appear that on marine frequencies, one would hear nothing but mariners. Such is not the case, at least not on the Coastal Harbor Telephone channels.

Before dealing with frequencies and such, there is something you must know, a rule that has to be observed. DO NOT EVER repeat details of conversations heard. It is obviously unethical, and it is illegal. If you violate ths rule, you might find yourself in serious trouble, and you would deserve to be. Those



who use the Coastal Harbor Telephone system do not want the personal details of their lives made a subject of idle table conversation. You are not listening to these frequencies to be a snoop but only to learn more about the people who live in other parts of America.

Where to Listen

Stations operating in this system can be divided into two groups. First there are the ships. They range from tiny shrimp boats to luxury liners. And there are the Coast stations.

We will start with the Coast stations which carry the land end of the conversations. They are the easiest to hear and probably the most interesting to listen to. Almost anybody might have occasion to call a ship at sea. On these frequencies you will hear bookies, ministers, farmers, performers and just about every other kind of person under the Sun. The chart gives the frequencies and locations of all U.S. Coastal Harbor Telephone stations.

Here is a channel by channel resume of some of the frequencies used by ships.

2009—This is one of the frequencies used when working the station at San Pedro, California. Chief users of this frequency are tuna fishermen, about half of which are of Spanish descent.

2118—This is Miami's working frequency. There is a smattering of just about everything here but the pleasure yachts probably have the edge.

2126—This is one of the frequencies that can be used when placing a ship to shore call

[*Continued on page 116*]

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20 Watt Modulator

Two problems which confront the new ham upon graduation from the Novice ranks are: (1) the addition of a VFO to the existing transmitter and (2) modulation of said transmitter. In a few cases the use of commercial transmitters, such as the *Johnson Viking Ranger*, allows the transition from Novice to General to take place with no additional effort or expense; but in the majority of cases the Novice rig is either home built or of the low cost commercial variety, such as the popular *Heathkit AT-1*. Thus, the two aforementioned problems are posed.

The first problem is quite easily solved, what with the large number of commercially available VFO's, both in kit and wired form; but the second problem is not so easily coped with, because, upon careful investigation, it can be seen that there are relatively few modulators available on the market suitable for use with transmitters running between 30 and 40 watts of input.

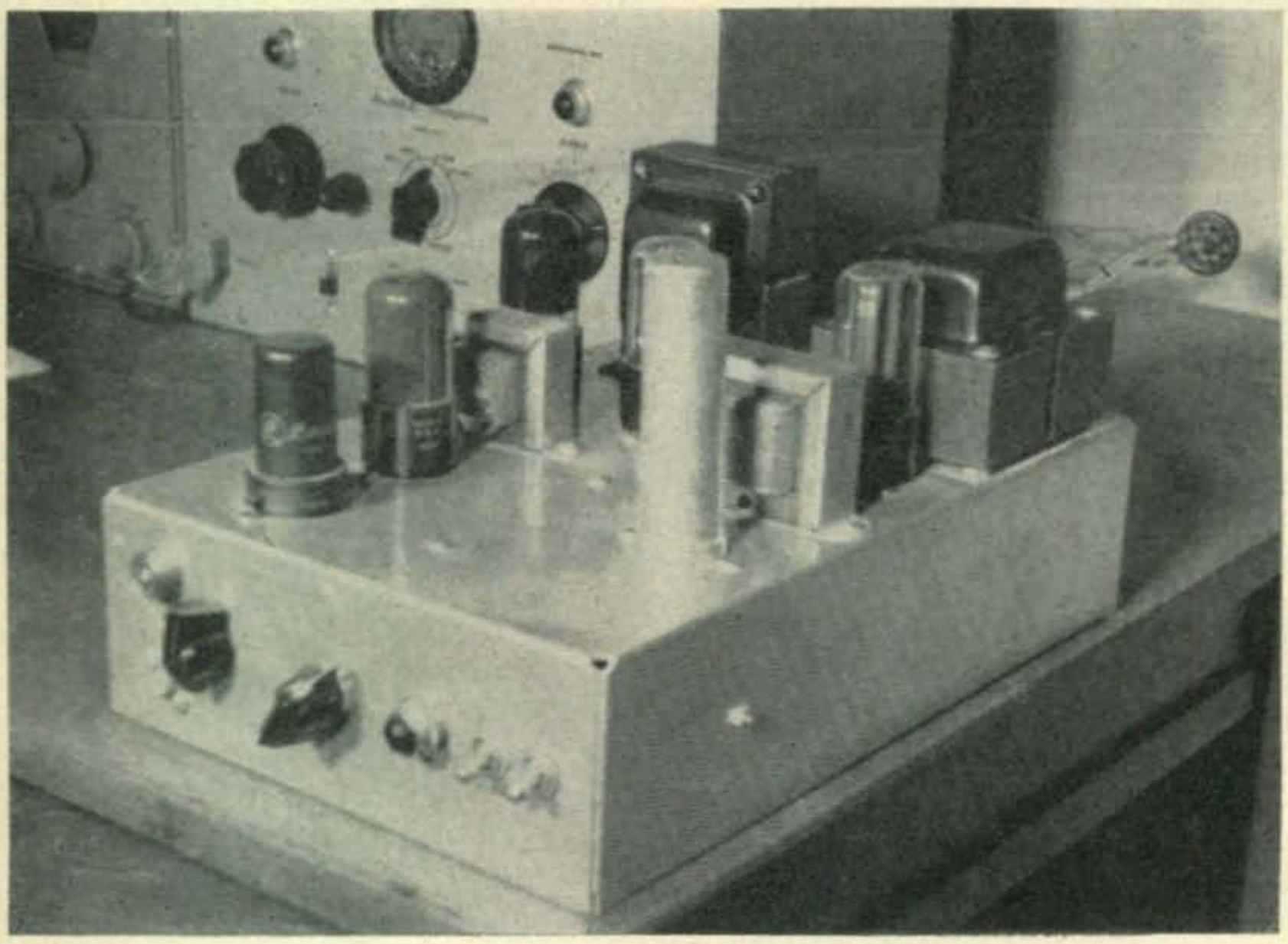
Of course, one of the biggest considerations in the purchase or construction of such a piece of equipment is economy. To many the problem of economy is extreme, and it forces them to sacrifice good, high-level plate modulation for less efficient methods of low-level modulation, such as the modulation of either the control or screen grid of the final amplifier tube. It is true that these methods prove less expensive in the *initial* outlay of cash, but, due to their overall inefficiency, it proves less expensive in the long run to use plate modulation.

After experimenting, unsuccessfully, with clamp-tube screen modulation of a *Heathkit AT-1*, it was decided that a more efficient means of modulation would be necessary. Considering the factors of simplicity and economy, a suitable circuit was arrived at: the circuit presented in this article.

The modulator described in this article was designed to modulate the author's *Heathkit AT-1* transmitter. Audio output is on the order of 15 to 20 watts, depending upon the plate voltage used. It will supply sufficient audio to fully modulate a transmitter running between 30 and 40 watts of input.

The Circuit

The circuit, presented in *Figure 1*, is quite straightforward. The speech amplifier is designed for use with either a crystal or dynamic



The finished product

type of microphone. The 6SJ7 operates as a class A1 voltage amplifier, and it is resistance-coupled to the first half of the 6SN7. The first and second half of the 6SN7 also act as class A1 voltage amplifiers, the first half being resistance-coupled to the second half and the second half being transformer-coupled to the grids of a pair of push-pull 6V6's, operating in class AB1.

In the original circuit only one half of the 6SN7 was used, but it was found that the incorporation of both halves resulted in more gain, making it possible to fully modulate the transmitter without having to "hit" the microphone as hard as was necessary before the change was made. The few additional components required for this third stage of amplifcation do not greatly increase the over-all cost of the unit.

The power supply should supply well filtered d.c. Practically any good supply capable of approximately 175 to 200 volts at 20 ma. for the speech stages and between 250 and 300 volts for the modulator tubes will do.

Construction

Construction is conventional, but several things should be kept in mind. First of all, components associated with one stage should not be allowed to "double back" into one of the preceding stages. This minimizes the possibility of audio feed-back. To minimize hum in the modulator, especially the speech amplifier, all heater wiring should be done with shielded cable, and the filament transformer should have a center-tapped secondary with the center-tap grounded. All other leads which indicate the use of shielded wire should be as short and direct as possible, and, of course, the shield on each lead should be properly grounded at each end.

Most of the component values are not critical, and any value within plus or minus 10% of the given value will usually be acceptable. Neither is the chassis layout critical, but

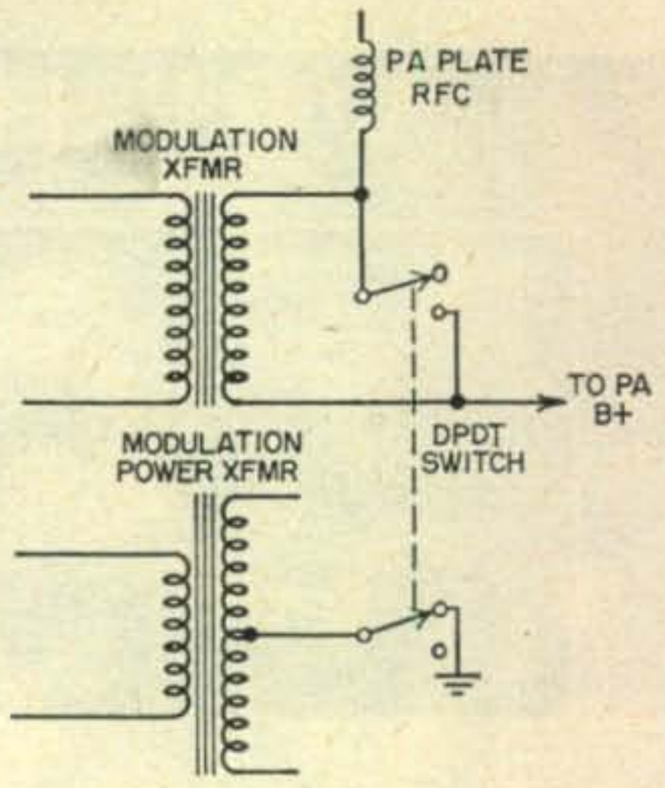


Fig 2.

it should be kept in mind that leads must not be allowed to double back into a preceding stage.

If more audio is needed to modulate inputs of up to 70 watts, a pair of 6L6's may be directly substituted in the circuit for the 6V6's. Of course, if this is done, it will be necessary to use a power supply which will meet the requirements of the 6L6's. It will also be necessary to use a modulation transformer which will properly match the 6L6's to their load and which will handle the additional power output.

Operation

Operation of the modulator is simplicity itself. It is only necessary to insert the modulation transformer secondary in series with the high voltage to the plate of the final amplifier to be modulated. It will be necessary to match the secondary impedance of the modulation transformer to the plate load impedance presented by the modulated stage. This impedance may be calculated by dividing the plate voltage to the final by the plate current, in amperes, which the final draws. After the above impedance is determined, simply insert the proper

[*Continued on page 100*]

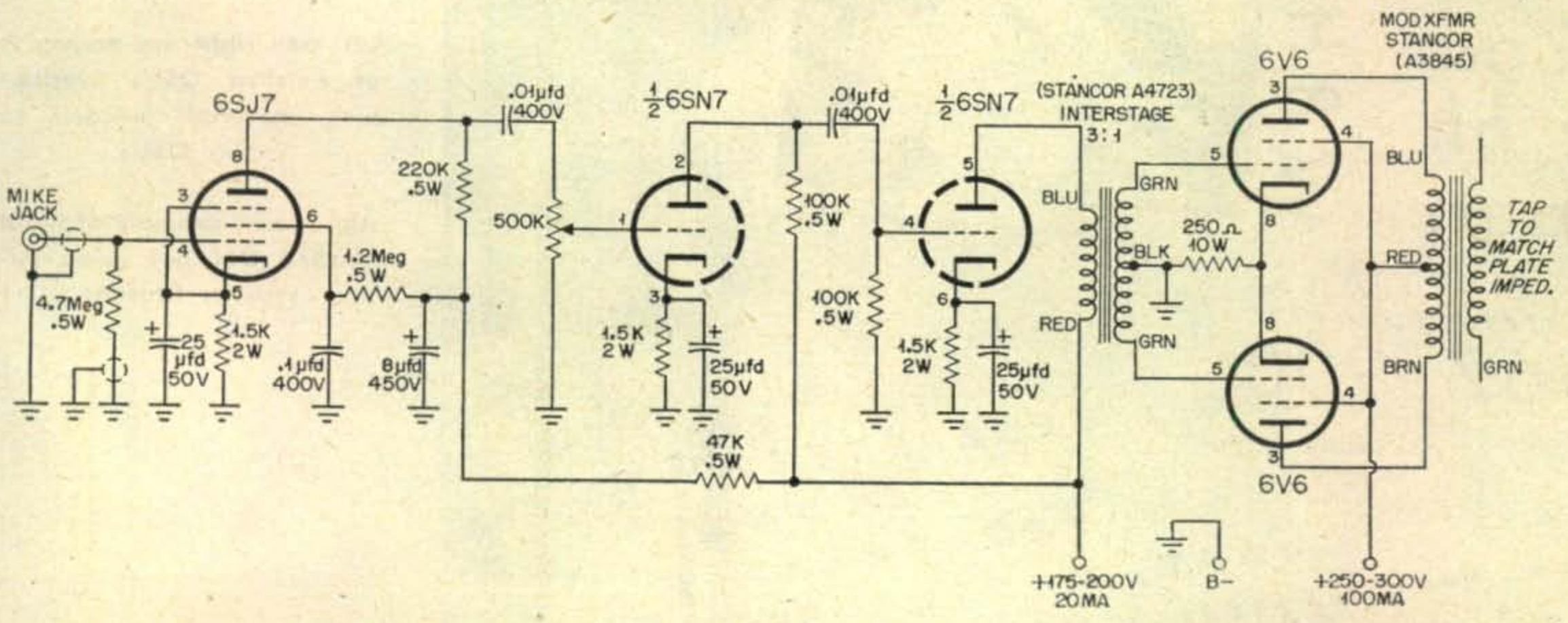


Fig 1.

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East Lansing, Michigan

QSLs the Photographic Way

For a few pennies each, anyone can have interesting, personalized QSL cards that will command more than the usual passing attention. The corner of the bedroom, the old coal bin or attic hideaway that contains our station is our own personal pride and joy. With photographic cards, not only our shack but our own handsome self can be shown off to all the OM's and YL's.

This may mean a little extra work around the shack, such as a quick sweep up of last year's cigarette butts and a return to the kitchen of that stack of dirty coffee cups (I'll bet the XYL will be pleased). Perhaps a few outboard capacitors may have to go into hiding and the unmounted meters removed temporarily, but the final effort will be well worth it.

There are several methods of attacking the problem of photographic QSLs. Since I figure that every dollar saved is a dollar that might possibly go into gear, the economic factor will be the ruling one. The easiest part of the job is the *wish* for some pictures of the shack to send to the gang. The hard job is the final *determination* to do it *now*. The rest is simple and easy.

The basic steps are these: (1) A layout is made showing photograph, art work, lettering or message. (2) A composite copy negative is made of this layout. (3) By contact or projection printing, the information contained in the copy negative is duplicated photographically on sensitized postcard stock.

Step number one should include laying out the design for the card. Sitting down and sketching out a rough form will be a valuable aid in arriving at a neat appearing finished product. Photographic postcard stock measures 3-7/16 x 5-7/16 inches. The layout card can

Left and right are examples of finished QSL's overlapping materials needed to make QSL's.

Above left: example of hand finished QSL not using Artype or Craftint.

The major area of interest was made here to conform to a 5¾ x 7¾ inch section of an 8 x 10 inch enlargement. Lettering is done with a brush using a water base show card paint.

be any size as long as it is the same width to height ratio. It will be easier to work on a larger card than the postcard size. A good size measures 9 x 5¾ inches since it can easily be cut down from a standard 8 x 10 inch enlargement.

The basis of your card will probably be a photo of yourself operating the station. This picture can make up the whole of the card or any part of it. You may want to combine several photos along with art work, lettering or a message of some sort. A gag card can be made up by rigging a haywire contraption for inclusion in the QSL.

After deciding on the layout, the next step is in getting the photographs you will want to use on it. I suspect that most of us work in confined spaces, up against walls or in areas where pictures of any kind are hard to get. Under these conditions, I would not worry about getting every piece of equipment in the picture. Work with the essential points of interest such as operating the key, tuning up the rig or using the mike.

Almost any camera is capable of taking a good picture. A small box camera with a flash attachment will do a nice job if operated correctly. A better shot could probably be made by using a couple of photofloods placed

to eliminate harsh shadows. The only rule to follow here is to shoot until you get a picture that you like. This may mean shooting several rolls of film but you will want to get a picture that will do your station justice and of which you will be proud. Everything else failing, you might invite a photographer friend over for dinner some evening!

You will want a glossy, single weight enlargement made from the negative. This enlargement will be trimmed to fit your layout. Since enlargements are made in standard sizes of 4 x 5, 5 x 7, 8 x 10 and larger, pre-planning will help you to determine which size you can best use to record the details of the shack you want on the final card.

If the photo is to take all the space on the card, then simply mount it on a firm base. A piece of cardboard and rubber cement will do the trick. Any excess rubber cement can be rubbed off when dry. Press the picture firmly to make a smooth mount. Dry mount tissue and a hot iron will do equally well. If the photo is to use only a part of the total area, then mount the picture on a piece of white or black poster board that has the same width to

The kitchen sink can serve as a makeshift darkroom area at night. Only three inexpensive chemicals are needed. Glass, plastic or enameled dishes can be used instead of photographic trays.

height ratio as explained previously.

Lettering or art work can be done directly on the photograph and card. A water base paint, such as tempera show card paint, works satisfactorily. A really neat professional job can be done with the use of inexpensive acetate cut out letters. These are sold in art stores under the trade name of "Artype" and "Craftint". If not available locally, black and white letters may be ordered in a variety of sizes and styles from "Artype, Inc. 549 West Randolph, Chicago, Ill." for one dollar per sheet. "The Craftint Mfg. Co., Cleveland, Ohio" sells only type in black styles for 85c per sheet. These letters are simply cut out in a block and burnished into place.

The next step is to get a copy negative made of the layout. This will probably require the

[*Continued on page 110*]

Time Delay Action With Any D. C. Relay

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Many Amateurs are adding relays to their equipment to simplify its operation and to speed up the transfer from transmit to receive operation. Recently we added a relay to our equipment to cut the B-plus voltage to our receiver and ground the receiving antenna during the transmit period. The relay worked perfectly except for one thing; it operated too fast. Each time it changed from transmit to receive our ears were assaulted by a loud howl. This was the result of the receiver being placed in operation before the high voltage on the transmitter had dissipated to ground through the power supply bleeder resistor.

Since it was apparent that the armature of the relay was being released too fast I began experimenting with ways of slowing it down. First, I tried slacking the tension on the armature spring. This had no effect on the timing. Next I tried rubber bands around the armature and coil to hold the armature against the coil a few seconds after the operating voltage was removed. This resulted in the armature not working at all. Remembering that relays operate on the electro-magnetic principle, I decided that the relay would work slower if I could increase the residual magnetism in the core of the coil when the voltage was removed. I secured a very small magnet and put it at the base of the core going through the relay coil. This slowed the relay a little, but still not enough to cut out all the howl. Since a condenser will hold a charge, I connected a 16 mfd filter condenser (of proper voltage rating) across the coil contacts. When the voltage was removed from the coil, the aramature would stay in place until the condenser had discharged.

The condenser in conjunction with the magnet gave me a delay of approximately 2 seconds, which was plently of time for the transmitter high voltage to dissipate. A note of warning, be sure to connect the condenser with proper polarity. Of course the above will not work on a.c. relays. The delay action can be controlled a small amount by moving the magnet at the base of the relay coil. ■

Results:

Save Eleven Contest

June 8-9, 1957

The scoring of the contest, with one point for contacts within the state, two for interstate, and three for outside the country, made it pretty easy for nearby DX stations to run up whopping scores. The winner, KP4AEB had 618 points with 206 stations worked. Next came KV4BD with 588 points and 196 contacts. Here they are in order for the top 20.

KP4AEB	**618**	**W6PVD**	**247**
KV4BD	**588**	**K4CUH**	**247**
XE1A	**462**	**W4KUL**	**233**
W6RCD	**364**	**WØZWN**	**225**
ZL1MQ	**352**	**K4KCY**	**222**
K4OXZ	**352**	**XP9AY**	**219**
K6TXR	**331**	**KP4ABA**	**215**
K2UBS	**289**	**W6GGX**	**213**
KP4AGS	**258**	**W6NTF**	**209**
W4YHF	**252**	**K2KJI**	**206**

The winners for each call area are:

W1LQQ	**180**	**W6RCD**	**364**
K2UBS	**289**	**W7RT**	**131**
W3PII	**186**	**K8AEK**	**196**
W4OXZ	**352**	**W9NTI**	**114**
K5ABV	**140**	**WØZWN**	**228**

This contest was announced in the June CQ and ran June 8-9, only giving about a one week warning to statesiders and no warning to DX stations. Even so, and despite terrible conditions, quite a gang turned out. I took a couple of days and made the following list of every station listed in any of the logs submitted (384 logs received so far). Stations listed "$" were top scorers and had 50 points or more. An "*" means that this station took the trouble to submit a log even though he had less than 50 points. A "?" indicates that this station was listed only once in the 384 logs submitted (unless I made a mistake) and that there might be therefore a chance for error in the deciphering of this call somewhere along the line.

?K1AKM
*K1AMW

*W1AJH
?W1AJV
W1BAB
W1BBM
*W1BDP
$W1BFT
*W1BIH
$W1BSO
?W1BTL
*W1CJU
?W1CNW
*W1COL
W1DBM
?W1DED
W1DSW
W1DVS
*W1EKO
*W1ETH
W1ETN
W1FAV
?W1FH
?W1FMW
W1FNQ
W1FRX
W1FTJ
W1FWW
W1GKJ
$W1GNN
$W1GVG
?W1HIT
*W1HOO
W1HPM
*W1IHV
*W1JMM
*W1JWU
?W1JYH
?W1LOB
$W1LQQ
$W1LSI
?W1LWL
W1LXR
$W1MAS
*W1MEG
W1MGP
?W1MJE
W1MPC
$W1NCO
?W1NLO
W1NZZ
*W1ODW
W1OKH
W1OPF
W1PKV
*W1PLJ
?W1QJA
W1QJB
$W1RCQ
?W1REP
*W1RFD
W1RLO
?W1RZQ
$W1SAD
W1SFH
?W1SFI
?W1SIR
?W1SPL
W1UMD
W1UYK
W1VN
W1VYK
*W1WEI
?W1WHX
*W1WJZ
$W1WYX
*W1YCZ
W1ZDP
?W1ZIF
?W1ZOP
*W1SPG

?W2ABB
W2ABE
*W2ABQ
?W2ADB
W2AEE
*W2ANB
?W2APD
W2AQT
W2ASG
$W2AVI
?W2BEC
*W2BHJ
*W2BLQ
*W2BOT
?W2BOY
W2BOX
?W2BQP
W2CCC
?W2CFT
*W2CJM
?W2CKS
*W2CS
*W2CVW
*W2CWB
W2DEN
?W2DHN
W2DLQ
W2DOK
$W2DSC
W2EAQ
?W2EAS
*W2ECY
*$W2EEJ

?W2EEN
*W2EPZ
*W2EQO
$W2EQS
W2ETD
W2ETZ
W2FCB
W2FEB
W2FGV
W2FVB
W2FZB
W2GSN
W2GTE
$W2GUX
W2GVU
W2GVV
*W2GYG
W2GYH
*W2HDV
W2HNA
W2IDO
$W2IFI
*W2IKH
W2IOU
W2IPJ
W2IUL
?W2JFN
W2JJ
W2JOJ
W2JUX
?W2JXR
W2KBH
?W2KDA
*W2KDN
W2KIE
W2KKQ
W2KNG
W2KRE
W2KVT
W2LDM
*W2LKS
$W2LNB
*W2LOP
W2LSK
W2MB
W2MBX
$W2MGP
$W2MK
W2MOF
?W2MOS
?W2NDW
*W2NIN
W2NIX
W2NLQ/M
W2NLX
*W2NLY
*W2NSD
W2OQR
?W2OSC
$W2OTC
$W2OXU
?W2OXY
$W2POA
?W2PQR
*W2PQZ
W2PSC
?W2PTD
*W2QHH
W2QNI
?W2QRR
?W2QXO
W2RS
?W2SKZ
*W2TAK
?W2TAQ/M
*W2TCF/4
?W2TOG
*W2TOP
*W2TUK
W2TVI
$W2TVR
W2UAW
W2UEE/3
$W2USS
$W2VCZ
?W2VEJ
W2VEL
W2FJN
W2WH
?W2WJS
?W2WSM
W2WSM/5
W2SZX
W2YML
W2YQN
W2ZAS
?W2ZBO
?W2ZPQ
?W2ZPG
?W2ZVO

K2ADU
$K2AIM
K2ARS
K2AUR
K2BDQ
?K2BFN
?K2BIC
?K2BIJ
?K2BLS
?K2BPH
$K2BPN
K2BTT/M
K2BWU
?K2CCL
K2CCM

?K2CEP
K2CIN
K2CJN
K2CJQ
$K2COU
K2CP/M
K2CPI
K2CSY
K2DFQ
K2DOH
?K2DQS
K2DSW
K2DUZ
K2EAD
K2EBA
?K2ECY
?K2EHI
K2EOF
?K2ETD
?K2FHX
?K2GVY
K2GYH
?K2HBE
*K2HRV
*K2HVB
K2IAD
?K2IKG
K2MAH
*K2MMT
*K2MVT
K2MWA
$K2MWH
K2MWV
?K2MYH
?K2MYS
*K2OBO
?K2OHH
?K2ONU
K2OQS
K2OSW
?K2OXX
K2PGP
K2PHC
K2PML
*K2PMN
$K2PMB
*K2PQS
K2PSE
?K2PZP
?K2QAH
K2QFT
$K2QHZ
?K2QQS
K2QXV
K2RCC
$K2RHM
K2RPJ
K2SAY
?K2SBX
K2SGH
K2SHX
K2XKK
?K2SOQ
?K2SOV
?K2SVQ
K2SXB
?K2SXV
?K2UAW
$K2UBS
K2UDT
K2UDN
?K2UJD
K2UUT
?K2UXG
K2VCB
?K2WWH
?K2YNO

?W3AAY
W3AIR
*W3ASK
?W3AUX
?W3AZO
?W3BFB
W3BFM
*W3BKE
W3BXM
*W3BYX
W3CBM
W3CDG
W3CHC
?W3DOA
W3DOB
*W3DZP
*W3DZW
?W3GNQ
W3GRF
?W3HDL/M
?W3HHF
?W3HL
*W3HME
W3HTF
W3HWE
?W3HWZ
?W3HXN
W3HXO
*W3HZN
W3IBX
?W3III
?W3IIR
W3ILZ
?W3IMU
?W3IOP
W3IXX
W3JT
W3JTK

*W3JZY
W3KAA
?W3KBC
*W3KER
W3KTW
?W3LEZ
W3LKZ
W3LOR
*W3LWT
$W3MAX
$W3MTU
W3MVQ
W3MYL
?W3NFB
$W3NHO
W3NOL
?W3NRM
W3NUS
$W3OPF
?W3OPS
$W3ORU
W3OUX
$W3PII
$W3PZW
W3QAP
$W3QOR
?W3RTZ
*W3SAA
?W3SG
W3SIR
W3SIW/M
W3SUJ
W3SZW
?W3TIC
?W3UDV
W3UJP
$W3UKG
W3UN
?W3UOV
W3UTK
?W3WV
?W3WZW
?W3YAE/M
?W3YDF
?W3YFW
W3YHU
$W3YIP
?W3YJY
*W3YPI
$W3ZAO
W3ZDR
W3ZKH
*W3ZNY
W3ZOR
?W3ZPC
*W3ZPO
W3ZPZ
?W3ZUM/M
*W3ZUW
*W3ZWZ

*W4AWR
?W4BBU
W4BIL
?W4BPD
W4BQF
W4BTL
?W4BTZ
W4CNN
*W4DS
?W4EED
W4EEO
?W4EFJ
?W4EOO
W4ESJ
W4EZR
?W4FAA
*W4FNR
W4GCB
W4GDE
?W4GVU
W4HBQ
?W4HCB
W4HHQ
W4HKB
*W4IEH
W4IF
$W4JBQ
*W4JPY
?W4JSS
?W4JZP
W4KET
$W4KFC
?W4KKG
$W4KUL
W4KUX
?W4KVA
?W4KVR
$W4KVX
?W4KXS
W4KZF
W4KZU
W4LEV
?W4LNX
?W4LPM
W4LVV
$W4NPN
*W4NYF
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W4NZB
W4OMW
?W4PJY
W4PNK
W4POP
*W4PUL
?W4RBG

?W4REH
W4RVE
?W4RZB
?W4SEU
?W4SJG
W4SJT
?W4SUJ
?W4TEP
W4TFP
W4TFZ
$W4TUN
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*W4UHF
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W4VFL
?W4VKU
W4VLS
?W4VWT
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?W4WDC
$W4YHF
?W4YKU
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W4YQU
W4YRE
W4YZP
W4ZCB
$W4ZKU
$W4ZPO
*W4ZPX

?K4AED
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K4APA
$K4ARP
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?K4CFB
*K4CFG
K4CLT
?K4CMG
?K4CQM
*K4CSK
*K4CSK
*K4CSY
$K4CTU
?K4CTY
$K4CUH
?K4DCF
?K4EFJ
$K4EJR
?K4ENT
K4EPA
$K4EQM
?K4ETQ
?K4EUR
?K4EYB
*K4EYV
?K4EBV
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?K4GCB
K4GCU
?K4GCV
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?K4GVU
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*K4HQD
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K4ICW
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*K4JKX
?K4JZA
?K4JZG
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?K4LFX
?K4LGA
K4LKF
?K4LLA
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*K4LOE
?K4LPJ
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K4LUA
$K4MAY
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$K4OXZ
K4POP

?W5AMZ
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W5AUJ
W5CDM
?W5CRP
*W5DFF
W5DYJ
W5DXW
$W5EXB/6
$W5FBQ
W5GES
*W5GIP
?W5CVX
?W5HAA/M
*W5HWF
*W4IRP
?W5KMS
W5NXF
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?K5LAV

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*W6EOQ
*W6EUH
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W6GAH
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W6GGC
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?W6GUD
*W6GUQ
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*W6HIL
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W6HUR
$W6SCR
$W6SEU
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?W6SLL
?W6SRM
*W6SRT
?W6SYR
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W6UOZ
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*W6ZOL
*W6ZPX

$K6AEZ
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*K6BBF
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*K6BHM
K6BPL
*K6BUD
*K6CHR
?K6CXR
*K6DCE
$K6DI
*K6DMI
*K6DQA
K6DSH
?K6EI
?K6EOB
?K6EUI
?K6FHA
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K6GVM
?K6HK
$K6HMK
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K6HVL
*K6IAH
*K6IAK
*K6ICS
$K6IUL
$K6IUZ
*K6IZI
K6JAV
*K6JRL
?K6JRM
?K6JVM
K6JWQ
K6KHG
?K6KII
?K6KKP
K6KQB
K6KQH
?K6LCF
?K6LNW
?K6LMW
*K6LPO
K6LVT
K6LXW
$K6MBW
K6MDN
K6MYC
*K6OHE
*K6OHJ
*K6OMU
K6OPQ
*K6OQC
*K6OQD
K6OTP
K6PBI
*K6PBX
K6PFJ
*K6PHY
$K6PLV
$K6QBF
?K6QV
K6QVI
K6RFW
*K6RHZ
$K6RIF
?K6RIS
$K6RKJ
K6RST
?K6RXU
?K6SIU
?K6SIV
*K6SHA
?K6SKF
?K6SKU
K6TJA
K6TKU
?K6TRU
$K6TXR
K6UDR
K6UEI
*K6UFK
K6UHA
$K6UHE
K6UOT
?K6VEF
?K6YJB
K6YJG
*K6ZJM
K6ZPI
K6ZUO

W7AAT
*W7AKX
*W7ANE
*W7APB
W7AZI
?W7BAJ
$W7BDR
?W7BMI
?W7BPD
?W7BRR
W7CJQ
?W7DDR
W7DDS
W7EFI
W7ENA
W7FLQ

*W7FTD
W7GBW
?W7GCD
*W7GTO
?W7GTT
W7GXU
?W7HF
W7HJA
W7JPA
*W7KCF
W7LHK
W7LJG
?W7MDG
W7MOB
W7NMO
W7PKM
*W7PSP
*W7PZ
$W7QNC
W7QOU
?W7RCF
$W7RT
?W7SCR
?W7SS
?W7TME
W7TMF
$W7TMO
W7UBA
W7VOE
W7VWF
W7VZZ
W7WLX

*W8ADH
*W8ANO
?W8BIT
W8BSG
W8BSV
W8BXX
?W8CEV
W8CEQ
*W8CFA
?W8CTI
*W8CU
W8CZU
$W8DGP
?W8DIM
W8DWR
W8EMW
?W8FBI/4
W8FEU
W8FGV
?W8FIB
*W8FMF
W8FWL
*W8GIU
$W8GKB
W8GRG
*W8GSB
*W8GUZ
?W8HJM
$W8HJU
?W8HPE
W8IGX
W8IQN
?W8IXG
$W8IZQ
*W8JUK
W8JRB
W8JXU
W8KC
W8KGA
W8KYX
W8LOX
W8MEB
*W8MFW
$W8MIB
?W8MIG
?W8MJK
$W8MXS
W8NAI
?W8NGO
?W8NHO
?W8NXK
*W8OJR
*W8OMY
?W8OOX
?W8OTC
?W8OZW
?W8PCS
W8PKD
W8PZD
?W8QJZ
$W8QZA
W8RQ
$W8SMC
$W8SPR
?W8SZD
*W8TCO
*W8TEYZ
$W8TJM
?W8JNS
?W8TOC
W8TQN
?W8TQY
W8TSE
W8TTN
W8TWJ
?W8TWV
W8TZL
$W8ULN
W8URX
?W8UXU

?K8ALA
$K8AEK

K8BTL
*K8CSL
K8CPR
K8DAI
K8DFW
*K8EK
*K8JFW

?W9AIF
$W9ATU
?W9DND
*W9DOR
?W9DPL
*W9DTC
W9DYX
W9FVU
?W9GBZ
?W9GGO
*W9HDY
W9HMF
*W9HQW
?W9HUQ
*W9HUZ
?W9ICF
?W9IEL
$W9EIR
?W9IHU
*W9ILR
$W9INN
$W9JCF
*W9JJU
W9JTU
*W9TWW
?W9JYU
?W9LCG
W9LIP
*W9LIT
?W9MEC
?W9MTI
*W9NDN
W9NNY
?W9NQI
$W9NTI
$W9NYY
*W9OHO
*W9OVF
?W9PQW
*W9PQZ
W9PUD
?W9QTN
?W9SFR
*W9SSP
*W9TLA
?W9TME
?W9TNI
$W9TRI
?W9UMJ
?W9UPM
W9UPN
?W9VHD
W9VMS
?W9VPN
W9VZY
W9WYB
?W9YTF
?W9ZCN
?W9ZPU

?K9ASL
K9BBC
?K9BMC
K9BNC
?K9BNV
*K9BPK
K9CSP
$K9ESL
*K9GDC
?K9GGV
?K9GJE
?K9GJE
?K9GWK

WØACX
?WØARO
WØBSG
WØBYM
WØCKV
$WØDIB
?WØDIH
?WØEIB
?WØEMG
WØEMS
WØEQS
WØFUH
WØGVI
?WØHEN
?WØHFS
WØHGW
?WØHSF
*WØHST
WØHVR
WØICB
WØICV
WØJEC
WØJXJ
WØKMV
?WØLDI
?WØLDO
?WØLFN
?WØLLI
WØMAJ
WØMEF
WØMG
WØMKR
?WØNAN
WØNSH

K8BTL
*K8CSL
K8CPR
K8DAI
K8DFW
*K8EK
*K8JFW

?W9AIF
$W9ATU
?W9DND
*W9DOR
?W9DPL
*W9DTC
W9DYX
W9FVU
?W9GBZ
?W9GGO
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W9JTU
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W9WYB
?W9YTF
?W9ZCN
?W9ZPU

?K9ASL
K9BBC
?K9BMC
K9BNC
?K9BNV
*K9BPK
K9CSP
$K9ESL
*K9GDC
?K9GGV
?K9GJE
?K9GJE
?K9GWK

WØACX
?WØARO
WØBSG
WØBYM
WØCKV
$WØDIB
?WØDIH
?WØEIB
?WØEMG
WØEMS
WØEQS
WØFUH
WØGVI
?WØHEN
?WØHFS
WØHGW
?WØHSF
*WØHST
WØHVR
WØICB
WØICV
WØJEC
WØJXJ
WØKMV
?WØLDI
?WØLDO
?WØLFN
?WØLLI
WØMAJ
WØMEF
WØMG
WØMKR
?WØNAN
WØNSH

WØNWX
$WØOFR
?WØYV
?WØPGI
?WØPKV
?WØPQA
?WØQAJ
*WØQDQ
WØQMD
?WØQNB
*WØQPJ
*WØRAC
$WØRLI
?WØRRJ
WØSCT
*WØSLD
$WØSQN
?WØTFM
?WØUAF
WØUAN
?WØUIO
*WØUIX
*WØUPT
WØUXN
WØVHL
?WØVKB
*WØVZB
?WØWAI
*WØWER
*WØWWA
*WØWWJ
?WØWYV
*WØYQJ
?WØYVV
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?WØZWM
$WØZWN
?WØZXH

?KØAAM
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?KØAPS
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*KØAZD
KØBVN
?KØBVW
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*KØCER
?KØCFG
?KØCFH
?KØCHA
*KØCHE
?KØCJC/4
*KØCOV
KØCQA
$KØDLS
?KØDLX
?KØDVW
?KØDVZ
KØEAT
$KØEHQ
KØEKZ
?KØGFQ
?KØGOH
KØGUD
$KØGXP
?KØIAH
?KØIKH
KØIXC
?KØKYY

$CN8JW
$ CX2AY

?HC1HJ
HI7LMQ
?HP1HJ
HP3FL
?HR2MC

?KA2EE
?KA2NY

KG4AI

KH6AFS
KH6BVU

?KP4AAM
$KP4ABA
$KP4AEB
$KP4AGS
$KP4CA
?KP4CAX
*KP4QA
$KP4ZD

$KV4BD
KV4BU

?KZ5GH
KZ5UC

?OA5G
?OA5H
OA5M

PY1KZ

*VE1ABU
*VE3DNR
VE3QF
?VE4FA
VE4MP
?VE4NP
VE4TA
$VE4WS
VE6AJ

VK2QL

VP2LU
?VP9CV

?W1LRK/VO1

XE1A
XE1E

$ZL1MQ
? ZL1MT
* ZL1WB
? ZL4IB
ZP5IB
$ZP9AY
*ZS5VJ

Viking Valiant Modifications

Nat McKelvey W7PEY
4738 E. 13th St.
Tucson, Arizona

John Bilka, W7EUF
3236 E. Waverly
Tucson, Arizona

Bias problems in the new Viking Valiant can readily be solved by a simple modification which will: (1) completely isolate final bias from modulator bias; (2) create a better impedance match between the bias supply and the modulators; (3) unload the bias supply a bit, thus making components run cooler and (4) reduce the wild swinging of the modulation meter to a reasonable orbit during modulation.

A second modification, necessary in some, but not all Valiants, will eliminate self oscillations in the 12AU7 keyer tube and in the 6CL6 crystal oscillator when the transmitter is in the stand-by position. When this occurs, the self oscillation is fed into the receiver, on some bands, beating with every incoming signal, thus creating entirely unnecessary QRM.

A third minor change eliminates a feed through of signal to the receiver when the transmitter is on stand-by, operating crystal control. This phenomenon occurs on some, but not all, Valiants. The correction is made by changing the value of R11, the 6CL6 grid resistor, from 33K to 100K.

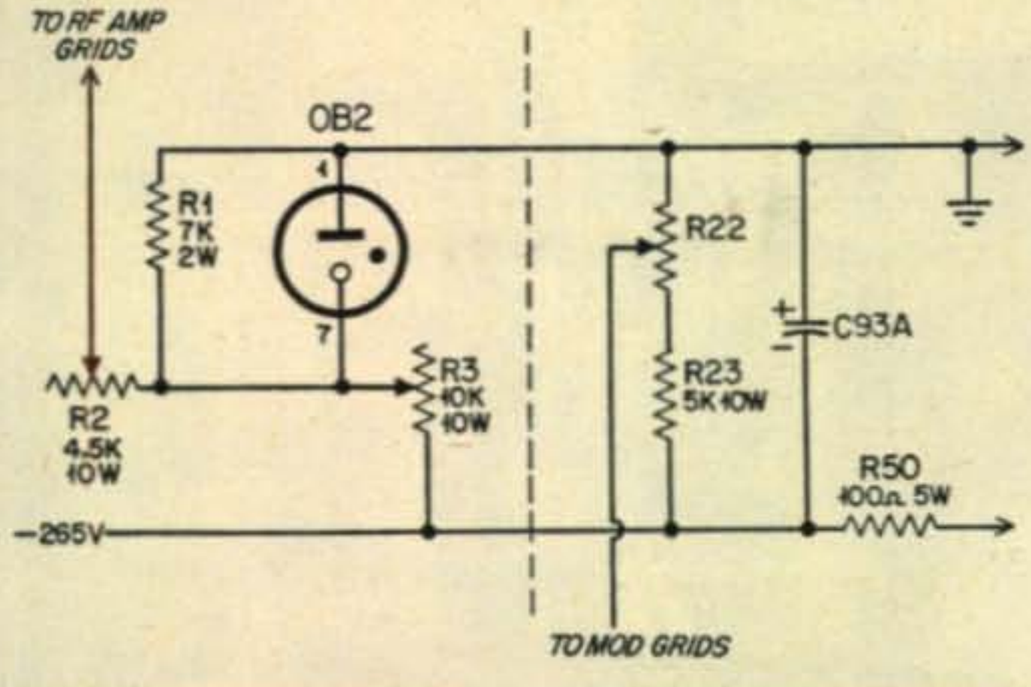
In the original Valiant circuit, both final grid bias and modulator grid bias are taken from R22, a 5K, 25 watt resistor with two sliders. While this system will work, it is rather difficult to adjust and somewhat unstable in operation since there is interaction between final and modulator bias because of the common supply source, R22.

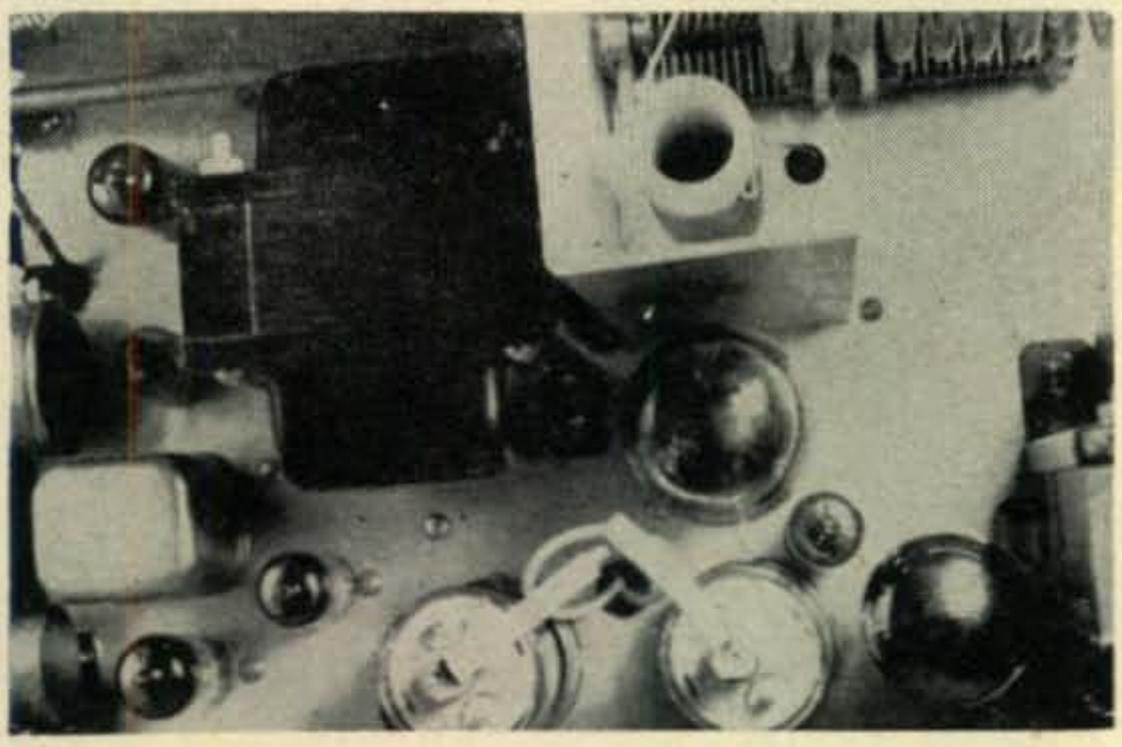
The Johnson Viking manual states that this is so and warns that, in order to maintain constant static modulator plate current, it is necessary to maintain the final grid drive at 8 mils at all times. And they mean 8 mils! A change of one mil, which can easily occur with changing line voltage, will change the static modulator current sufficiently to alter modulator grid bias. When the modulators become too heavily biased, the audio from the speech amplifier tends to become attenuated and reedy, giving the appearance of insufficient modulation. Furthermore, it is a nuisance to have to ride constant herd on the RF grid drive control.

The Valiant at W7PEY, especially on 10 meters, shows sufficient grid current change to require fairly regular readjustment if modulator static current is to be maintained at the correct value, using the original bias system. The new system eliminates the necessity to watch grid drive so closely. In fact, the grid drive can fail completely and the static modulator current will not change.

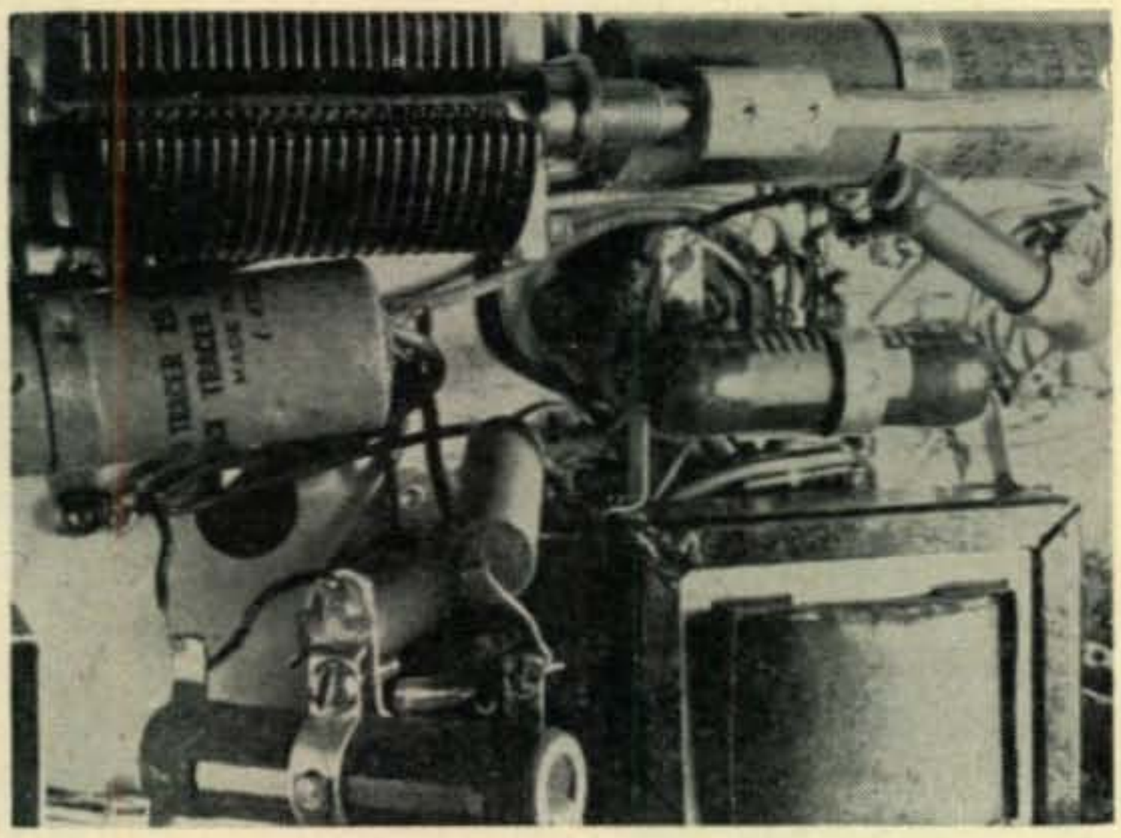
Installation of components for the modified bias system is easy. In the chassis, beside the rear 6146 modulator tube, there is a hole which will perfectly accept a miniature pressure type socket for the OB2 voltage regulator. Necessary wiring can be done on this socket before it is inserted, thus making wiring easier.

R3 in the new circuit can be mounted on the choke, L44, which is underneath the chassis, bolted to one end near R22. The mounting feet of R3 are soldered to the case of L44. On the terminal strip to which modulator transformer connections are made, there is a





Shown is the speech amplifier and modulator section of the Viking Valiant. On the right, with the picture horizontal, tubes at the bottom, is seen the OB2 voltage regulator which has been added to the original bias system. This tube lies in the triangle formed by the right hand 6146 modulator tube, the low voltage rectifier in the rear by the shield, and the bias rectifier on right next to low voltage transformer.



Shown are components and wiring associated with the new bias system. L44 is in the lower right hand corner. To the left of this choke is R22, the original bias resistor with the RF slider and connection removed. The remaining slider provides bias for the modulators. Attached to the right end of R22 is R23 and, beneath it, on the socket of the bias rectifier tube, is R50. Attached to the case of L44 is R3 in the new bias circuit. Between it and the case of L44 can be seen R1, new circuit. Attached to the slider of R3 is R2, the miniature TV type slider resistor which provides final bias voltage.

vacant lug. One end of R1 is soldered to this lug as is the slider of R2 and also the gray wire to RF grids after this wire has been removed from the slider of R22, furthest from ground, and lengthened a bit so that it will reach the lug in question.

R2 is a miniature slider resistor of the type used in television work and its non-floating end can be soldered directly to the slider of R3, thus making R2 self-supporting. The slider of R3 is also hooked to the cathode of the OB2, pin seven. The non-floating end of R3 is tied to the –265 volt end of R23 in the original circuit.

The plate of the OB2 is soldered to the ground end of R22 and also to one end of R1 in the new circuit, *fig 1*. The dotted line in *fig. 1* has no significance other than to indicate the original circuit to the right of it, the new circuit to the left.

In the original circuit, the value of R23 is changed from 9K, 7 watt to 5K, 10 watt which tends to improve the impedance match between the bias supply and modulators. R50, old circuit, is changed from 1,000 ohms, 2 watt, to 100 ohms, 5 watt, thus unloading the bias supply, helping components run cooler.

After modification, adjustment of the biases is done as follows: The slider of R3 in the new circuit is adjusted so that the OB2 ignites well. This adjustment is made with no voltage on the final amplifier, only low voltage stages operating. The ignition will occur with approximately 5,500 to 6,500 ohms of R3 employed.

Next, the slider of R2 is adjusted, no voltage on final, so that a –70 volts of grid bias, as measured at the R2 slider, is found. The final bias adjustment is now complete and can be forgotten. It will be found, with final amplifier plate voltage applied, that the final grid bias, measured at R2 slider, will rise to about –85 volts as called for by the Viking manual.

Actually, for safety reasons, slider adjustments are made with no voltages on the transmitter anywhere. In the case of final bias, the results of slider changes are measured with only the low voltage stages running. In reading slider adjustments for modulator bias, voltage is applied to both low voltage stages and final, but with the grid drive control and audio gains set at "zero."

Adjustment of modulator grid bias is accomplished by moving the remaining slider of R22 until a static modulator plate current of 60 mils is read on the transmitter meter, switched to the modulator position. With 60 mils static current, the modulator grid bias voltage will read approximately –55 volts as called for originally in the Viking manual. An errata sheet, issued by Johnson, states that this voltage should be –35. Every attempt by the writers to bias the modulators by adjusting for

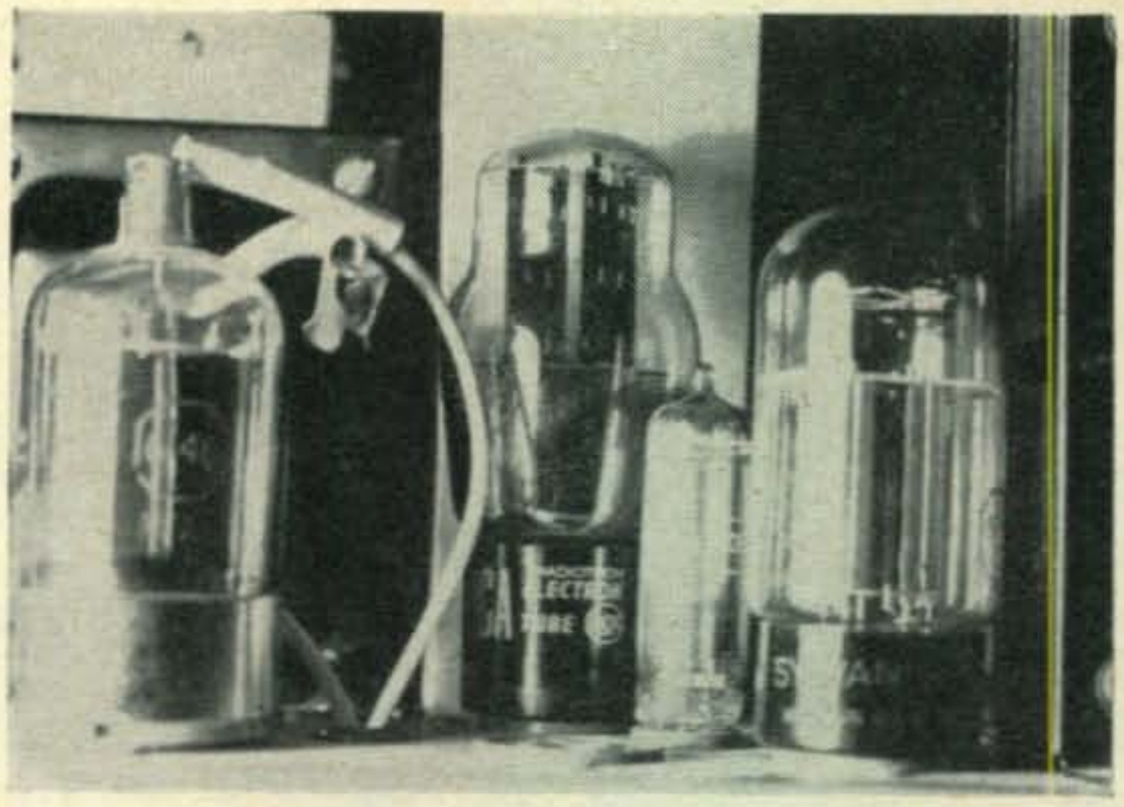
this voltage was unsuccessful. With only –35 volts of bias, the static modulator plate current was so high that the meter wouldn't read it, the needle went off-scale. It is obvious that the adjustment should be made for current, letting the voltage take care of itself.

At both W7PEY and W7EUF a great improvement in audio quality and modulation punch has been observed, following installation of the modification.

Another modification is required in some Valiants which tend to have self oscillations in the keyer and crystal oscillator tubes when the transmitter is on stand-by. This can happen because, on stand-by, the plate voltage is on the low voltage stages at all times.

At W7PEY, the transmitter was putting a signal into the receiver only on 15 meters while at W7EUF no trouble was encountered. PEY discovered that, on stand-by, the 6CL6 crystal oscillator tube was self oscillating badly. Examination of the Valiant circuit disclosed that the control grid of this tube is connected to the grid of the second half of the 12AU7 keyer tube through a 1 meg resistor, R7.

R7 apparently supplies a –6 volts of keyer tube bias with the transmitter in the key up or AM phone position. This bias seemed insufficient to cut the keyer off during stand-by so the value of R7 was changed to 390K,



Shown in horizontal position is an end view of the OB2. One modulator tube is removed so as to give a clear view.

raising the bias to about –18 volts. This completely cuts off the keyer tube and also eliminates the self oscillation in the 6CL6 crystal stage, which oscillation may be induced by the keyer tube, through R7, to the control grid of the 6CL6. On c-w operation the change produced no adverse results.

R7 is easily located, since it is soldered between two contacts on the back of SW2, the oscillator switch, located at the lower left hand of the transmitter panel when viewed from the front. ■

E. F. Johnson Co. Comments . . .

The proposed Viking Valiant modification article by W7PEY and W7EUF has received careful consideration here at the Johnson factory.

The system recommended does have merit.

A simplified less expensive modification, which we wish to recommend to Valiant owners, does not require a VR tube. The changes require removal of R22, installation of two controls and one fixed resistor. Diagram on request.

In regard to the self oscillation problem in the 12AU7 keyer tube, remedial changes have been incorporated in factory wired units for several months. One of our perpetual problems has been that people fail to send in their registration cards, therefore, they do not receive modification kits, data sheets and errata information which generally is of considerable importance.

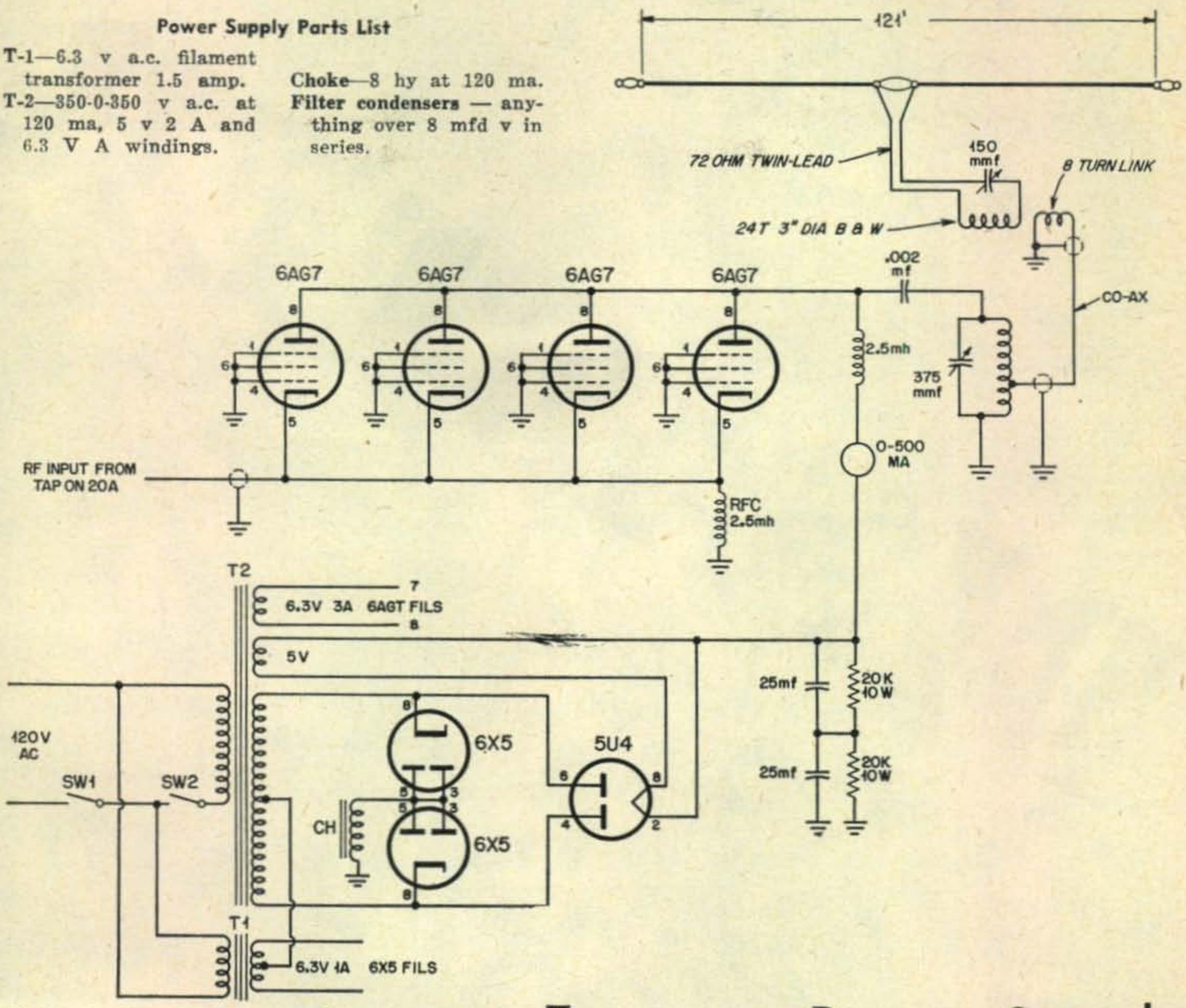
Modulator grid bias voltage will vary between –35 and –55 volts depending upon drive from the preceding stage. With drive the voltage will be –55 volts and without drive down to –35 volts.

E. F. JOHNSON COMPANY

Here is shown the self contained 150 w linear amplifier.

Power Supply Parts List

T-1—6.3 v a.c. filament transformer 1.5 amp.
T-2—350-0-350 v a.c. at 120 ma, 5 v 2 A and 6.3 V A windings.
Choke—8 hy at 120 ma.
Filter condensers — anything over 8 mfd v in series.



Schematic of unit shown at left.

Economy Power Supply for W6GEG's GG Final

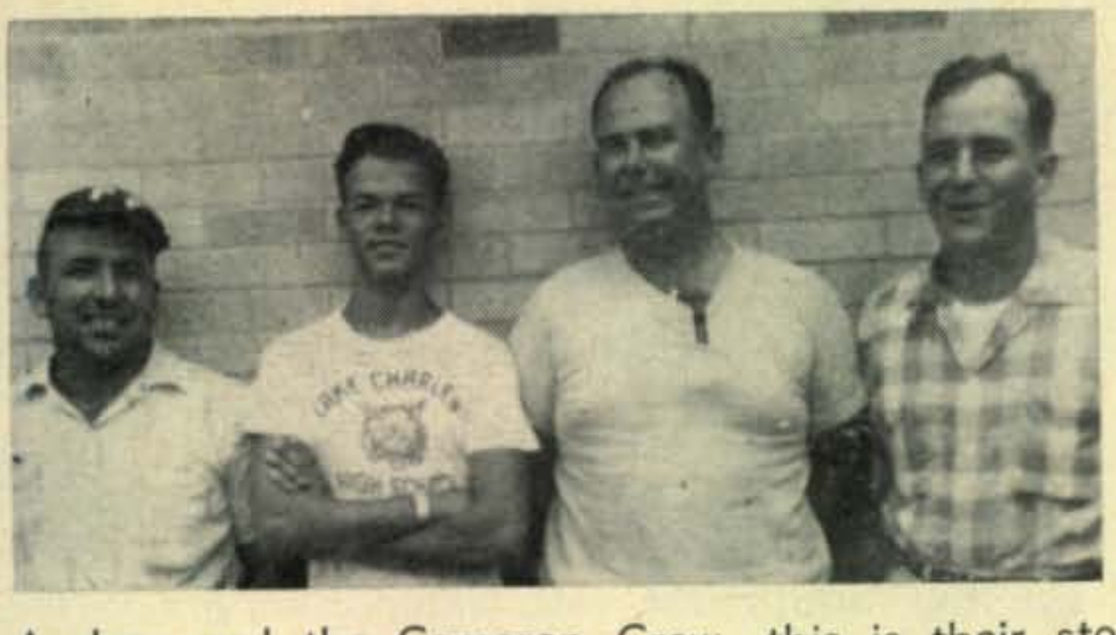
E. H. Marriner, W6BLZ
528 Colima Street
La Jolla, Calif.

Norm's W6GEG, article in September *CQ* using the 6AG7's GG inspired me to build the "Thing". It was just what I had been looking for as an auxiliary 75 meter amplifier. It does all Norm says it will and is very inexpensive to construct with the economy power supply described.

Obtaining a reasonably priced high voltage power transformer, under $20.00, seemed impossible and the project bogged down until the economy supply, using a receiving transformer, was tried. Now I can leave the old 4-250 on 20 meters and flip a switch and have a signal all hooked up ready to go on the antenna for 75 with 100 watts PEP. Many of the barefoot budget boys will welcome this easy way out to hook a final on the SSB exciter.

This economy power unit will stand up well since current is only drawn in pulses. The transformer is a receiver replacement unit and makes a very small, cheap and simple supply. This completes Norm's unit for a logical solution to those evening contacts on 75 without retuning the big rig. As far as I can tell, the signal goes just as far as the big rig. The 10b exciter has plenty of drive, with the plate meter pegging 200 ma. at 700 volts. The only precaution, besides saying "aaah" too long, is to make sure that the 6X5 filaments are warmed up before turning the plate supply SW2 on. This keeps the 6X5's from making like a Christmas tree. Two 25 mfd condensers at 400 working volts in series will satisfy the filtering. The choke is put in the negative lead so there is less chance of insulation break down in the receiving type choke. ■


DISASTER
Lake Charles with
Dock 4, City Docks
4 HRS
Picton D-5
Jerry Picton
Pete LaBouf
Jim Shaddin
Dr. Robt. Brown
Dr. Tony
Completely devastated except
Court House where operations for survivors
salvage are originating
Fm: Sid Grey
Request
Cameron Sheriff
CD
Name of Vessel
Lake Charles
Bodies
CP 22.
Stella Maris
Little Rock.
Call collect
(Magnolia 1359)
Phoned in
QSL K5CTR
Associated Press
New Orleans
Unable to reach Lake Charles
until 11PCS will radio add now
here are reports from nearby
Grand Chenier that another 25
dead the Porgy fish plant which
makes fertilizer and courthouse
only structures without big damage
cars are half submerged one barge
blown on land flattened
6 cars one car
tiny island
wheel of wrecked
took some Camero
back to search for
relatives said
"I begged them to go
crawled in with me when I
New Orleans FCC
are having trouble
radio traffic from
to Lake Charles on
frequencies 3850
LAKE CHARLES, LOUISIANA
K5BQT
Radio
PSE QSL TNX
"Bones" Harrington, 1623 9th Street



The Cameron crew. L to R, "Mike" McDermott, K5CTQ; Henry Schneider, W5HNS; Jades "Bones" Harrington, K5BQT; and Neal Mabray, W5VTU.

Photos by Chuck Buchannan

Jack Bock, W5OVE
3422 Taylor Drive
Lake Charles, La.

Audrey and the Cameron Crew, this is their story

the Disaster

Hurricane Audrey has passed from headlines to history. The victims of her devastating visit have now turned their thoughts and energies to the tremendous task of rebuilding order out of chaos and tragedy. In the wake of disaster come the stories of courage, heroism, sacrifice, unselfishness and generosity. This is an effort to recount, at least in part, the role played by Amateur radio operators at the disaster scene.

Audrey gave no quarter when she lashed the Southwest coastline of Louisiana. Her story is well known to readers and listeners everywhere. At this writing her toll stands at 506 dead and missing. Her cost in property damage has not yet been fully estimated. The figures continue to climb with each passing day. The eye of the hurricane brought waters 12 feet and higher which washed many miles inland demolishing the communities of Cameron, Creole, Grand Chenier, and Holly Beach, Louisiana.

Lake Charles was hard hit with high winds and some flooding. The Hams there were having their troubles with antennas down and power failures. No one had any idea of the destruction that lay some 40 miles south until a report came from a tugboat captain, who rode out the storm, that only the court house of Cameron was visible above the water at the height of the storm. Assistance had to come from Lake Charles and since Audrey had made the roads impassable, that assistance would have to come by water and air.

With all lines down, roads out, and contact established only by boat and helicopter, it was imperative that some quicker form of communication be established. About 4:30 AM Friday, Jim "Bones" Harrington, K5BQT, and Neal Mabray, W5VTU, were called by Roger White, W5SKW, the local Emergency Co-ordinator, and were asked to go to Cameron to set up a Ham station. They contacted Mike McDermott, K5CTQ, who joined the group. Later, at W5SKW's request, Henry Schneider, W5HNS, a teen-ager went down on Saturday morning to act as relief operator. This is essentially their story.

Audrey came ashore early Thursday, June 27th. Neal and Mike had put in a full day at the Lake Charles Air Force Base where they are stationed. Neal and Jim had been at CD headquarters most of Thursday night, so it was a tired group of men who answered the 4:30 AM call to assemble their gear and depart for Cameron.

The main problem of equipment was a power supply. A 1500 watt gasoline generator was obtained from W5BSR. Arrangements had been made to fly the group down by helicopter, but the load proved too heavy. The equipment consisted of K5BQT's BC-669 transmitter-receiver, W5VTU's HQ-129X, and K5CTQ's TCS transmitter plus the generator and additional gear. With air transportation ruled out, the only other way to Cameron was by water. The equipment was taken to the lake where Mr. Graves Castle offered the use of his private 45′ deep sea fishing launch, the Sea Castle. At 9:30 AM Friday morning, they started over the 42 mile water route to Cameron. Half an hour after departure Mike had hooked the TCS and HQ-129X to a boat-hook supported antenna and trailing wire ground. K5CTQ/M maintained hourly skeds with Lake Charles for the duration of the trip. Several other stations were worked and many offered assistance. One station in Orange, Texas advised that hospital beds were available there for disaster victims.

Once the visual evidence of the hurricane in Lake Charles was behind them, the atmosphere changed. It was actually a beautiful clear morning. The water was high but calm. Far from shore with its tall, moss laden cypress trees, chugging along in the boat, it could have been an ordinary fishing trip. Only the tense activity on the radio gave any feeling of the presence of disaster. As they came into Cameron Parish (county) and moved nearer to shore they began to see signs of the fury of the storm. This area has always been a popular fishing spot and was familiar to the men in the boat. Again and again they passed places where they knew there had been homes and fishing shacks. Occasionally they spotted a stove

or other household appliance sitting isolated, but no other signs of human life. Everywhere there were animals. Some were huddled on little hillocks, many lying dead or floating with the debris. They could see large boats that had been driven aground resting at crazy angles hundreds of yards inland. The fishing trip atmosphere was gone but it was still impossible to comprehend the scene around them. It began to look like a nightmare.

Approaching Cameron they found the familiar docks gone, only the pillings remained. It was about 500 feet from the former shore to the first small spot of dry land. The streets of the town were blocked with up-ended houses, trees, boats, cars and tangled debris. The equipment, heavy and unwieldy, had to be carried through half a mile of sometimes hip deep water. In their path lay an overturned roof containing a small attic bedroom. They climbed onto what had been the floor hoping it was still strong enough to support them and the weight of their equipment. The next day when rescue crews began removing this obstruction, they found 17 bodies huddled together in that tiny room.

A deputy sheriff, known only as "Bolo" and several other unknown persons helped carry the gear. Their destination was the Cameron court house, the one remaining habitable building in the entire town. A big tree had fallen across the steps but the court house itself, on approach, looked undamaged. When they entered they found the interior had been made a shambles of broken glass from the driving rains.

The equipment was carried to the second floor where the high water had not reached. A law office room which had been used as a temporary morgue was cleared of bodies to make room for the station. The heat and odor of death were so strong the boys looked for space elsewhere. Operating space was made available in the Petit Jury room on the second floor. The generator had to be placed in the Men's room down the hall. By one of those unpredictable quirks of nature, the court house flag pole was still standing and was used to support a 75 meter folded dipole and a 50 foot not-very-long wire antenna.

Putting up the antennas presented several problems. Cars, abandoned in haste by the refugees, had piled up in a hopeless tangle around the court house. It was necessary to crawl through cars and over half uprooted trees to get the wires up. Under some of the cars, where it was relatively dry, Neal saw as many as a dozen snakes, some four foot water moccasins. From then on he walked the bumpers of cars to keep off the ground.

Conditions in Cameron were appalling. The day had dawned with a blistering sun bringing intense heat. The usually high humidity of this part of the country was aggravated by the flood conditions. In the area lay some three to four hundred human bodies, countless thousands of dead animals, including more than 30,000 beef cattle, and tons of decaying vegetable matter. The stench of death was overpowering. A truck loaded with what had been fresh shrimp before the storm, was caught in the tangle of cars along side, and up-wind from, the court house.

Two stations were set up. K5BQT using Jim's BC-669 was established to work into CD relief headquarters at Lake Charles on 3850 kc, the Southwest Louisiana emergency frequency. Alongside, K5CTQ was rigged with Mike's trusty TCS transmitter and Neal's HQ-129X for contact with the "outside" world on 7256 kc. Friday afternoon at approximately 2:30 PM they were on the air. As soon as the equipment was operating, the melee started. One of the first messages sent was a request from Sheriff O. B. Carter for rescue teams. Fortunately at the Cameron end of the circuits, most emergency addressees could be reached in the building—Sheriff Carter, the emergency medical station, and CD.

Friday's traffic was almost all high tension emergency messages. Urgent calls went out for drinkable water. An oil company in Texas radioed the welcome news that one of their barges, now parked on one of Cameron's main streets, contained thousands of gallons of fresh water that had been used for ballast. Request for ice brought an authorization from the Pure Ice company to open their ice house in Cameron. They were advised in return that their ice house had been a mortuary for over 24 hours and already contained 61 bodies. The danger of disease mounted with contaminated food and water supplies. Swarms of insects descended, made more dangerous by the lack of even the most basic sanitation facilities. Requests for tetanus anti-toxin, gas gangrene anti-serum, medical personnel, soap, mops and buckets, poured out of the stricken area by

Taken in Lake Charles, after . . . TCS Transmitter and ops. : to R, K5BQT, W5HNS, K5CTQ, W5VTU.

radio. Other messages, more grim and more urgent, brought the full realization of the extent of the disaster to the worried, waiting people at the other end of the circuits. One message read, "Urgently need 10 morticians or people who can handle dead bodies" . . . another, "Urgently need 150 plastic bags or wool blankets to transport bodies" . . . "Urgent requirement for additional helicopter to search for and evacuate survivors." Most of the dispatches sent by reporters to their respective news services, radio and TV stations, were sent through this station.

Actual operating was hectic. Between 1,400 and 1,500 messages were handled ranging from the direst emergency traffic to countless "welfare" messages. Jim operated until 7:30 Friday night when utter exhaustion caught up with him. He scrounged a cot and Neal took over the 3850 kc spot until 6:00 Saturday morning. The operator not actually on the "mike" got little rest. There were endless other chores to be attended to. Nursing the generator was a constant job. Messages had to be run, drafted, and logged in a mounting pile of paper work. The circuits were so busy that the operator's hands could seldom get from the microphone and send/receive switches to a pencil.

It wasn't just the pressure and amount of work that drove them past the point of mere fatigue. Many refugees and former residents still filled the court house. With grief stricken faces or just blank with shock, they milled around not knowing quite what to do. Dr. C. Clark, a Cameron physician and medical hero of the storm, was in the shack drafting a message for emergency supplies when the word came from Lake Charles that his wife and three of his five children were missing. He worked on. (Later it was learned that his wife had been found alive but the three little children were lost.) One woman sat, alternating between shock and sudden overpowering grief as she awaited word about the safety of her family who had tried to reach high ground to the North. Another sat in dazed silence, not even able to give her name. Welfare messages, the name used to identify inquiries regarding the safety and whereabouts of survivors or missing persons, piled up in huge numbers. It was impossible to answer them all. No one had a complete list of the dead or missing. By Friday evening there was such a backlog of welfare messages that it was necessary to get authority to defer them to let emergency traffic through.

Much of this traffic had to do with requesting and dispatching the armada of small boats shuttling between Lake Charles and Cameron. They carried rescue teams and supplies southward, the survivors, and the dead, back to Lake Charles. These messages gave their time of departure, ETA, list of survivors and number of bodies aboard, and the number of ambulances necessary to meet the boats on arrival.

Contact was made late Saturday with W5-TPD/M. He had arrived at the Cameron ferry with 7 airboats from Port Arthur. Due to the late hour Sheriff Carter advised them to wait until dawn, then sweep the marshes and shallow water areas for survivors and dead. The next morning they called in to report that on their first trip TPD's airboat had picked up six bodies and marked 14 others for future collection. Ex-KN5AEY, unable to operate pending a new ticket, spent three days alone in this small outboard boat collecting storm victims. No doubt there were other Hams, unable to get on the air, who helped in the Cameron rescue work in any way they could.

At the court house the boys had been working continuously with little food and virtually no rest. They had their personal belongings arranged within arms reach and lived on crackers, cheese, spam, and Vienna sausages. Mike, on the verge of collapse by Saturday morning finally took time off about 10:00 AM. Neal took over the 40 meter position so Mike could get some rest and medical attention. To "relax" Mike helped unload bodies from helicopters at "suicide strip," the 400 foot emergency landing strip on the main street of Cameron. By 2:00 PM he was very ill and was put to sleep with a needle. Up again at 7:00 PM he worked another 26 hours straight.

On Saturday, George Dewey, a Cameron resident and fishing acquaintance of Jim's came to their aid. He took over the job of running messages, controlling the crowds of people milling around the shack, helped people prepare messages for transmission, scrounged gas —and most important—coffee. He obtained two pounds of Louisiana "Dark Roast" coffee from the Salvation Army and took it to a boat to brew it with about 4 gallons of water. Ordinarily such a brew would dissolve a spoon, but to the operators, at this stage, it tasted like weak tea.

Henry, W5HNS, and two other hams, W5-MKI and K5ESN caught a helicopter for Cameron Saturday morning. Henry saw the disaster area from the air. "You always expect the papers to play something up, but it was much worse than the papers described it. Dead cattle everywhere and houses scattered all over. Everything seemed to be under water except for parts of the road." They had to walk a mile from the emergency heliport to the court house. K5ESN, Chuck, took over on the 40 meter position for over an hour before catching the helicopter back to Lake Charles. Henry stayed on and worked as relief operator for about 9 hours Saturday night and several more on Sunday.

Friday evening power was run into the court house from a Coast Guard diesel generator. However, the line voltage hovered around 80 VAC and the boys had to switch back to their own generator to stay on the air. Their gen-

(*Continued on page* 102)

Two Sidebands

for Less than the Price of One

R. C. Eaton, W2SBI
214 Shaver Ave.
North Syracuse, N.Y.

A good strong carrier was a prerequisite for any self-respecting amateur radio-telephone station for many years. More recently, it has been demonstrated that the transmission of such a carrier actually penalizes the operator of a phone transmitter by unnecessarily restricting the useful information carrying power which can be obtained from a given final amplifier stage. Radio amateurs are becoming increasingly conscious of the fact that a carrier signal is—if you'll pardon the expression—pretty much of a dead beat when it comes to voice transmission.

With this in mind, and with an eye on a pair of 811-A's which of late had known only the hardships of forty meter cw operation, this operator began to ponder the problem of giving the phone bands another try. Single sideband operation was considered, but a search through the junk box revealed nothing in the way of phase-shift networks, lattice filters, or money.

At about this same time, W2CRR was turning out an article for CQ on a suppressed-carrier system of double-sideband transmission. A quick look at what he was proposing was enough to show the main appeal of DSB to the average ham—SIMPLICITY. Here was a modulated final amplifier that could be designed to run at any power level, and which would not waste valuable watts in the transmission of a carrier.

There was only one fly in the ointment. 811-A's are triodes, and the simple screen grid modulation scheme suggested by Costas wasn't applicable in the case of the aforementioned final. However, this amplifier was designed for linear operation and it had been used several years earlier for single-sideband work. So why not build a lower power DSB exciter to drive it? Why not indeed!

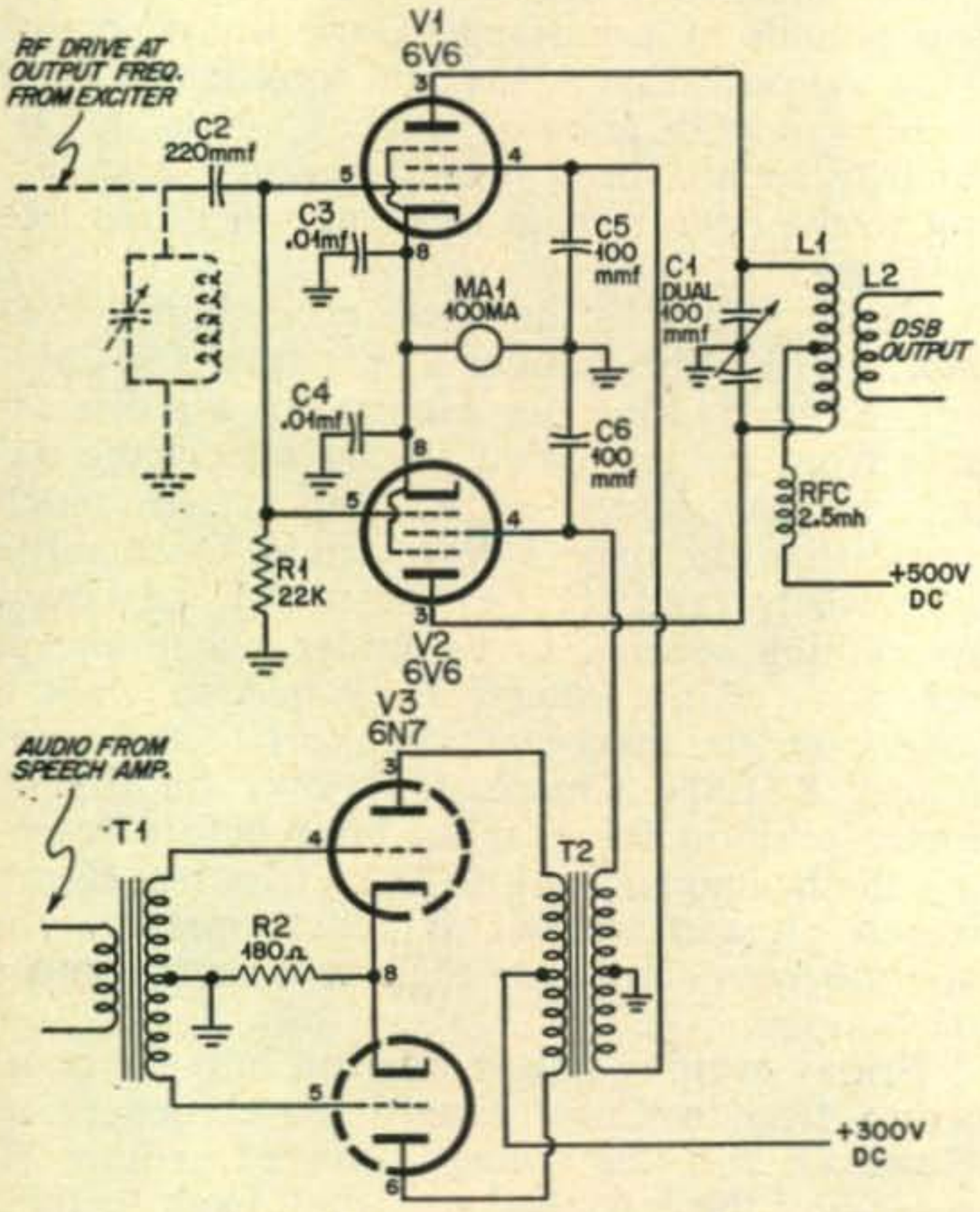


Fig 1. Proper Valves for C5 and C6 are 1000 mmf rather than 100 mmf as shown.

The Circuit

A short pencil and paper session resulted in the schematic diagram of *fig 1*. This relatively simple arrangement is not claimed to be completely new and novel. For the most part, the familiar looking components are arranged in a manner which is quite orthodox. The two 6V6 tubes are connected as a balanced modulator, and are screen modulated by the 6N7 operating as a push-pull audio stage.

Study of this circuit will reveal a few details which differ from a conventional screen modulated stage. Although the control grids are in parallel, the plates are connected in push-pull. The result of this is to cancel out the carrier signal which would normally be developed across the output tank circuit. This cancellation is a result of the two tubes working in opposition in the plate circuit while their control grids are driven in phase.

The screen grids are not tied together as is usually the case, but are connected to the push-pull output of the audio modulator transformer T2. The center tap of this winding is returned to ground so that with no audio,

the screen grids are at ground potential. T2 is a transformer originally designed for class B driver service. In order to provide the necessary impedance step-up (the screen grid impedance is higher than the desired load impedance on the audio modulator), the transformer windings ..re interchanged. The winding labeled "primary" is actually used as the secondary, and the old secondary then becomes the primary. The 6N7 audio modulator tube is biased to operate in the class AB region. The remainder of the circuit is quite conventional with the possible exception of the 6V6 plate voltage which will be discussed later.

In the absence of any audio signal, the cathode current of the 6V6 tubes rests at a low value since the voltage on the screen grids is zero, and the control grids have a negative bias produced by the rf drive applied to them. An audio signal fed to the primary of T1 will be amplified by the 6N7, and it is of interest to discuss the effect of the resulting audio voltage across the secondary of T2. Since this secondary winding has its center tap returned to ground, the voltages applied to the screens of V1 and V2 will be of opposite phase. As the screen of V1 is driven positive, the plate and screen currents flowing in that tube will increase. At the same time, the negative-going voltage on the screen grid of V2 will cut off the plate and screen current flow in the latter tube. When the audio signal reverses polarity, the current in V2 rises and V1 is then completely cut off.

Now it has already been pointed out that the method of connecting the two 6V6's is such as to cause cancellation of the carrier signal. However, this cancellation effect does not apply to the sidebands which result from the modulation process, and so the output signal obtained across L2 consists of the usual symmetrically related pair of sidebands, but without the usual carrier. As a result, there is output power when you talk, and when you stop for breath, the output drops to practically zero. (Even the best behaved circuits may well allow a smidgen of carrier to sneak through, but experience with this circuit has shown that the amount of carrier at the output isn't worth the slight additional complexity of a special balancing control.)

An interesting feature of this circuit is its self-neutralizing operation. Users of screen grid tubes know that steps frequently have to be taken to prevent self oscillation at the operating frequency. In low power circuits, the "gimmick" capacitor is often the answer to this problem. In this balanced modulator, however, the grid-to-plate capacitance of one tube neutralizes the other, and no trace of self-oscillation has been detected on any band from 10 through 75 meters.

Although the tube manufacturers might raise their eyebrows at the plate voltage applied to the 6V6's, readers of CQ should be well-hardened by now to circuits operating at somewhat higher than rated plate voltage specifications. In normal AM operation, no one would be concerned about using 250 volts on the plates of these tubes, and it is well known that 100% modulation will result in peak plate voltages twice the value of the applied D. C. In DSB operation, therefore, the philosophy is that since the tubes will stand that voltage, why not run them there. Of course, care must be taken not to exceed the average plate and screen dissipation capabilities of the tubes, but since each tube works only 50% of the time during modulation, and loafs along at low current without modulation, this is not a severe limitation.

Typical operating conditions for this circuit are shown in *fig 2*. Under these conditions, the output of this balanced modulator is more than adequate to drive the 811-A linear to 300 watts input.

	No Modulation	With Modulation
Balanced Modulator Grid	3.2 ma.	2.8 ma.
Balanced Modulator Cathode	13 ma.	53 ma.
Audio Modulator Cathode	4 volts	5 volts

Fig 2. Operating Data

The balanced modulator has also been used directly into the antenna with good results. It is always surprising to the newcomer in suppressed-carrier transmission to see how effective relatively low power can be. With every watt being utilized as useful "talk power," a 25 watt transmitter can do a creditable job.

The more suspicious readers may have already looked for the "real" schematic which shows the numerous other components not revealed in *fig 1*, but which are "always" required to make the simplified circuits shown in *most* Fig 1's work properly. Search in vain, Gentle Reader. This *fig 1* is IT. With this circuit tied on the end of your low power buffer or frequency multiplier, and a few volts of audio to apply to the primary of T1, you are in business. You can if you wish, fancy it up with refinements like cw/phone operation; but if all you want to do is to try DSB, nothing more complicated is required.

The driver which provides grid excitation for this balanced modulator need have only low power output capabilities. A 6AG7 with 300 volts on the plate and 100 volts on the screen has been found to be more than adequate either when running "straight-through" as a buffer, or when used as a frequency multiplier.

Audio requirements are equally modest. 5 or 6 volts R.M.S. at the primary of T1 will do the job nicely, and almost any speech amplifier can be utilized. The speech equipment at W2SBI incorporates a clipper and low-pass filter, and the low impedance output from a cathode follower drives T1.

Tune Up Procedure

This balanced modulator operates directly at the desired output frequency. Your exciter (which should have good frequency stability just as is required for SSB) is tuned up in the normal fashion to obtain the desired grid current in the 6V6's. This current has not been found to be particularly critical, so don't worry too much if it can't be adjusted precisely to the value shown in *fig. 2*.

Since there is no carrier output from this balanced modulator, tuning can be accomplished only with modulation. With a suitable load connected to the output of L2, and with fairly tight coupling between L1 and L2, modulate with a steady tone and adjust C1 for maximum output. Then adjust the output level of the speech amplifier for normal operation as shown in *fig. 2*.

If your station equipment includes an oscilloscope, it is easier to determine how well the DSB rig is working. When the audio from one side of the secondary of T2 is connected to the horizontal deflection plates of the cathode ray tube, and rf voltage is taken from across the load on L2 to provide vertical deflection, the resulting pattern under modulation conditions will be a double trapezoid or "bow-tie" as it is usually called. This is the same pattern obtained in a two-tone test of a linear amplifier, and a little thought will confirm that two sidebands should generate such a pattern. With this test setup, the usual tendency to crank up the audio gain an excessive amount will show up as flattening-off of the rf peaks.

Circuit Refinements and Variations

There are additional niceties that some constructors might wish to include. One, which has already been mentioned, is provision for cw operation. This can be readily done by providing the following switching functions:

1. Open one filament lead to V2
2. Reduce plate voltage from 500 to 300
3. Insert 470 ohm 2 watt cathode bias resistor in V1-V2 cathode ground return lead (required for protective bias only when previous stage in exciter is keyed)
4. Disconnect V1 screen grid from secondary of T2 and return it to +300 volts through 47,000 ohm 2 watt resistor.

The result of this operation is to make V1 a conventional amplifier (still neutralized by the grid-to-plate capacity of V2). The output on cw is approximately the same as the peak output under DSB conditions.

Another refinement suggested by W2HNH is provision for easier tune up on DSB by switching one of the screen grids to a dc source. Although this has not been tried on this particular balanced modulator, a value of +50 volts on the screen of V1 (or V2) should provide sufficient carrier for tune up purposes.

Voice control operation is almost a must on SB operation, and any of the popular schemes for accomplishing it are directly usable for DSB.

Other tubes may be used in this same circuit. Both 6L6's and 6F6's have been tried with equally satisfactory results. For higher power outputs, 807's or 6146's are good bets, but you will probably have to modify the value of the grid bias resistor for best operation with these tubes and the higher operating voltages they require.

Another variation of this circuit would be to operate the control grids of the balanced modulator in push-pull and the plates in parallel as was suggested by Costas. This permits use of an unbalanced pi-network in the output circuit.

DSB Operation

Several months operating experience with DSB has provided an interesting cross-section of results. There are still amateurs who don't know how to receive suppressed carrier transmission—either SSB or DSB. They are the toughest to work since it is rather difficult to instruct them on tuning procedures if they can't understand you in the first place!

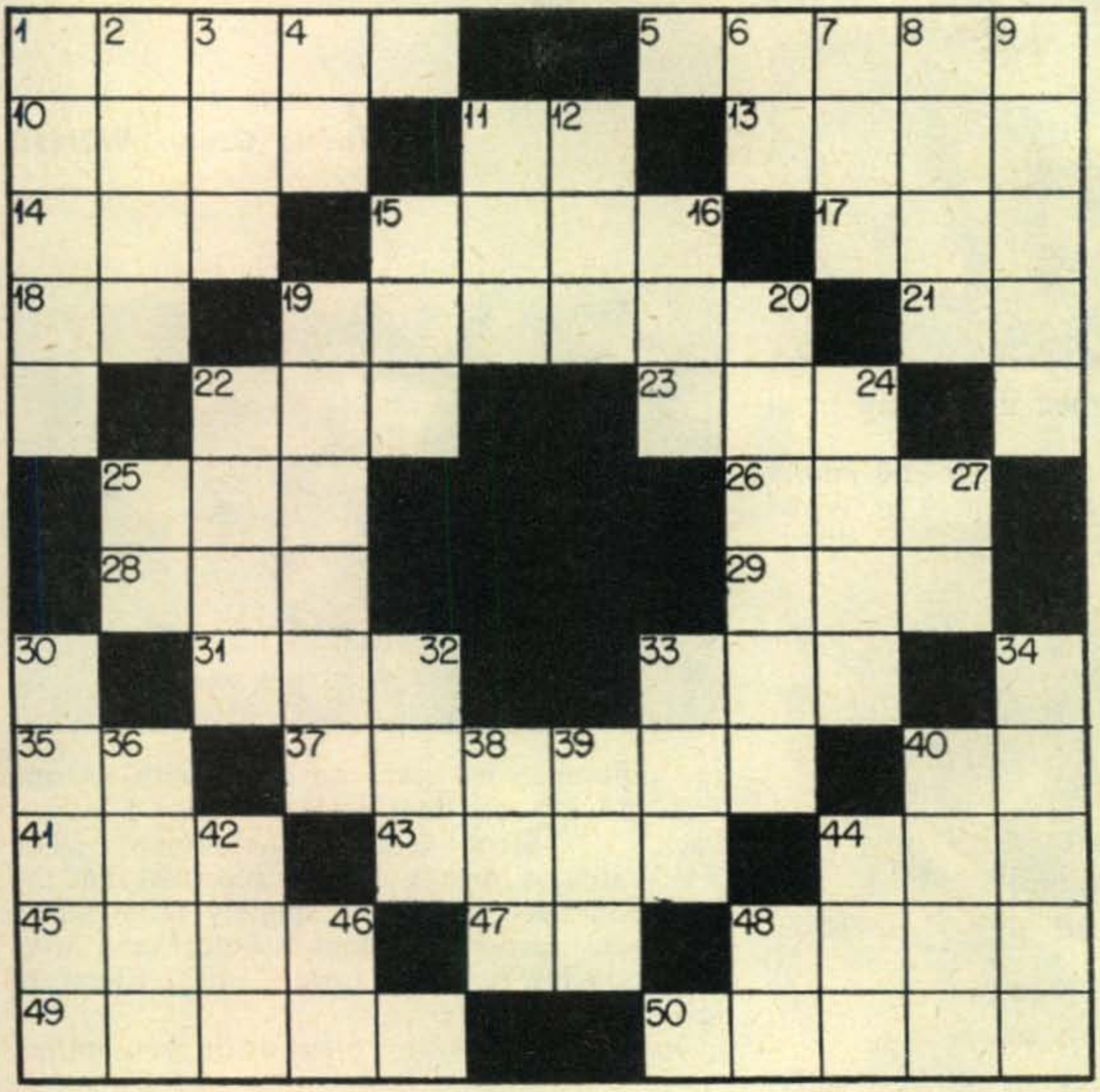
The technique for tuning DSB is essentially the same as for SSB. In a conventional receiver, the audio gain control should be advanced toward maximum, the rf gain (or sensitivity) turned down, and the bfo switched on. DSB is most easily tuned if sufficient selectivity is available in the receiver to attenuate one sideband. If the receiver is rather broad, as in the case of many unmodified surplus jobs, tuning can be a problem. The listener with such equipment may notice a flutter on the modulation when he is zero beat with the carrier frequency. This comes about as a result of the lack of phase synchronization between the suppressed carrier and the carrier inserted at the receiver. If one sideband can be attenuated to some extent in the receiver, this flutter will disappear.

In receivers equipped with crystal filter, Q-5er, Q-multiplier, or any of the selectable sideband adapters, there should be no real problem in reception.

The majority of SSB stations worked have

[*Continued on page 114*]

HAM Xwrd PZL



Answers are found on page 116

George Sturgen, W3OVU
College Park,
Lewisburg, Penn.

ACROSS

1. Electrical unit.
5. An instrument to register the amount measured by it.
10. What happens when DX comes through.
11. Male operator.
13. YL's name.
14. Eastern Maryland.
15. We like to do this with our equipment.
17. Would be hams need it.
18. ARRL contest.
19. Material for mast construction.
21. Costa Rica.
22. For hours we did it during DX contest.
23. Then off we went to—.
25. Who must have a license?
26. Terminal.
28. Terminal of foot.
29. Top man.
31. Half of entire.
33. Scrutinize log.
35. It burns.
37. QSL's.
40. Of degree (prep.)
41. Age.
43. Strong means to fasten.
44. Electrical age.
45. Unit of electrical motive force.
47. Syria.
48. Equal.
49. Salts.
50. East Indian plant.

DOWN

1. Our condition when beginning a contest.
2. We set our sights.
3. Used for a good ground.
4. On the point of (prep.)
6. Ireland.
7. —LA.
8. To send out.
9. The hobby.
11. Unit of resistance.
12. Usually on rare DX frequency.
15. Ability to do this means contacts.
16. What collects on our unused equipment?
19. Ability to operate.
20. Sending messages.
22. Wild plum.
24. Leader.
25. On the coming of (prep).
27. General Electric.
30. Ascertain your ability to operate.
32. To drag along.
33. Last minute of contest.
34. Celestial bodies.
36. Plump down after contest.
38. Needed to send CW.
39. Animal of North America.
40. Call district.
42. Germans.
44. Electrified fish.
46. Toward.
48. River in Italy.

Radio-A-Gram

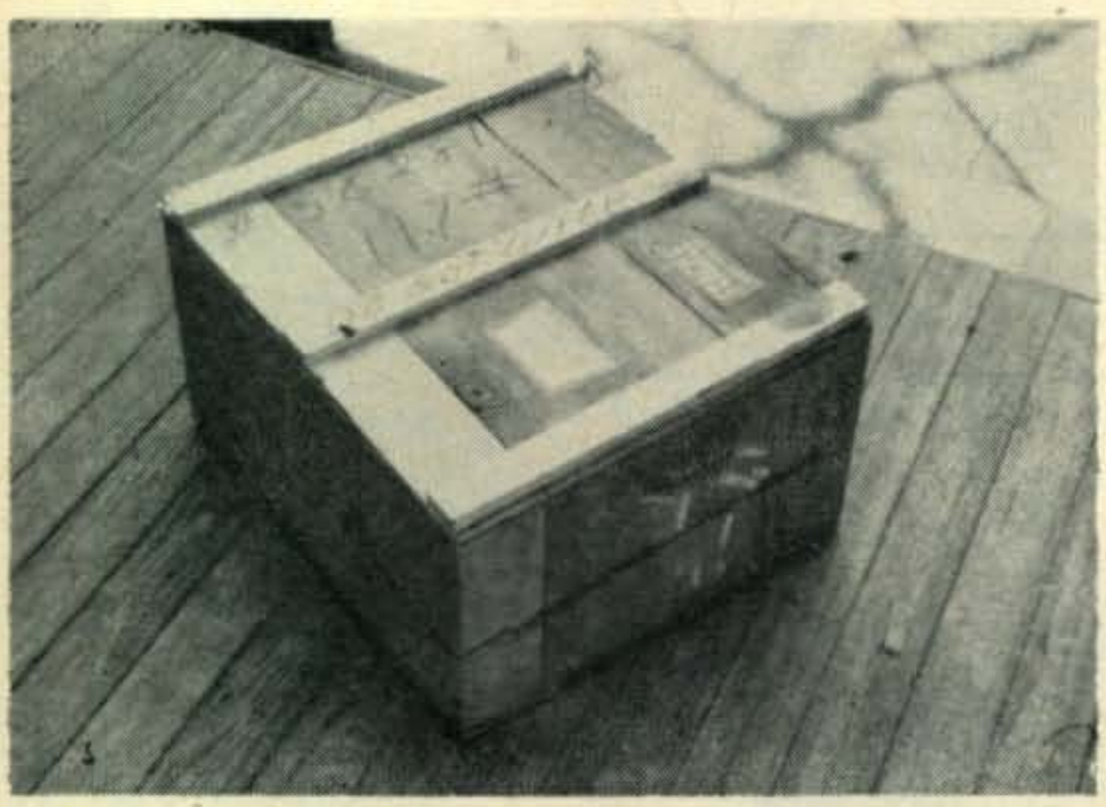
A goal to reach in our hobby.

T NJJZ JHXITQJI QTSXE HIWZX WM VWE TKWOWQB QJ EXMZ HXIPXUQ UJHB.

No score as solving it will be credit to you.

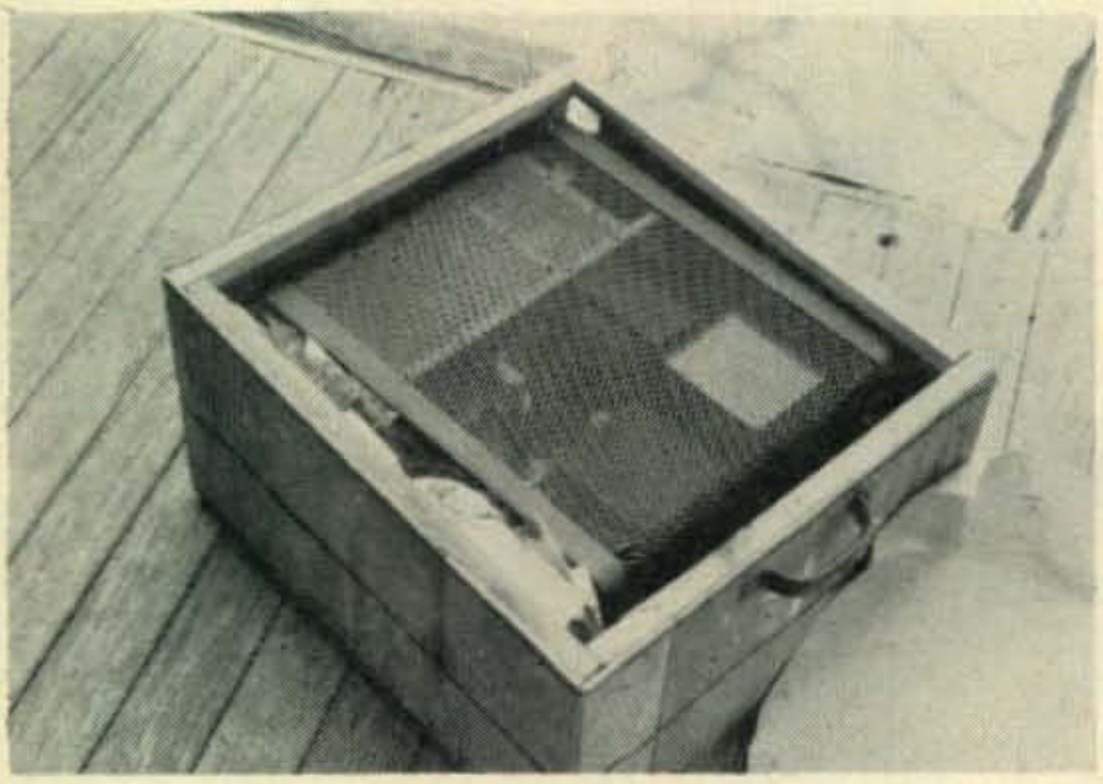
the 600L

Wayne Green, W2NSD
Editor, CQ



One day this crate turned up on my front porch.

After attacking it with a hammer and jimmy I managed to get the top off and peek in. Wow!



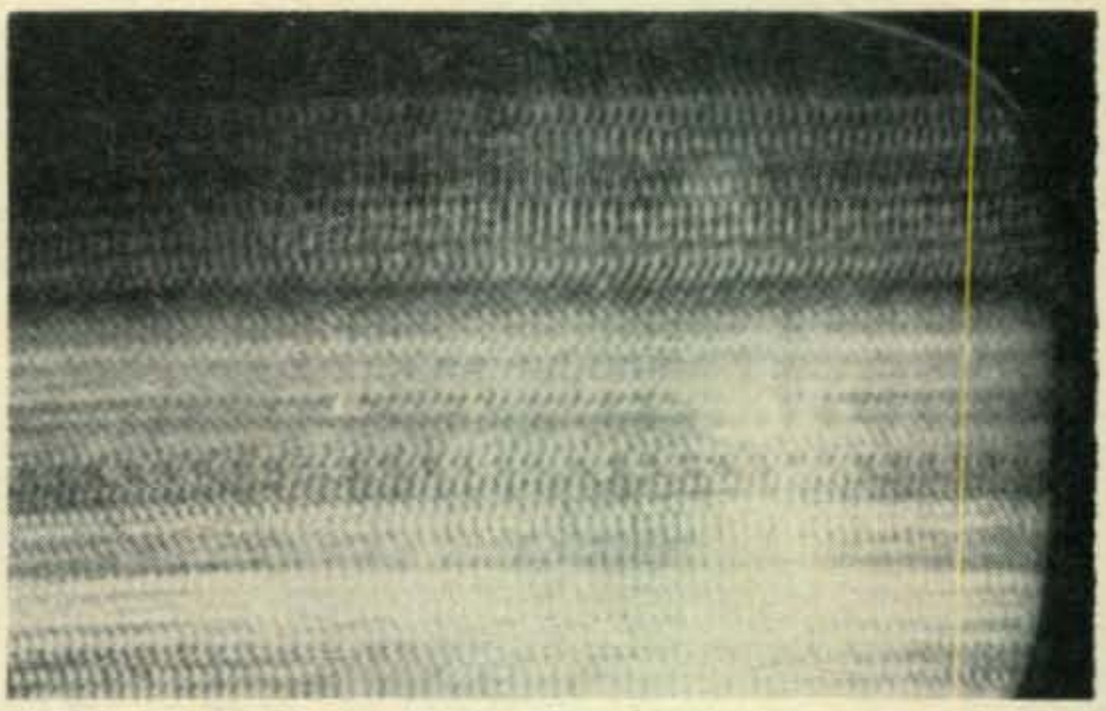
The rest of the crate peeled off real easy. Hmmm, the shipping notice says "Memo, for test purposes, return or else."

A few minutes later it was all set up on the shelf in the shack and wired in. I disconnected the pair of 813's that I had been using and plugged the RF output of the Phasemaster II into the 600L. Well, well, what do you know . . . no tuning knobs! Tune the exciter for maximum watts input on the 600L and then switch it to "Reflected Power" and tune the antenna tuner for minimum reflected RF. Gad, nothing to it.

After working a few fellows and switching back and forth I found that no one could tell

the difference between the 600L with its one 813 and my old final with two. No, I take it back . . . there were some comments. The TV Watchers Society upstairs reported that the TVI had been almost completely removed. I set up my camera and took a before and after sequence for posterity (and Central Electronics).

In case there is any question in your mind,



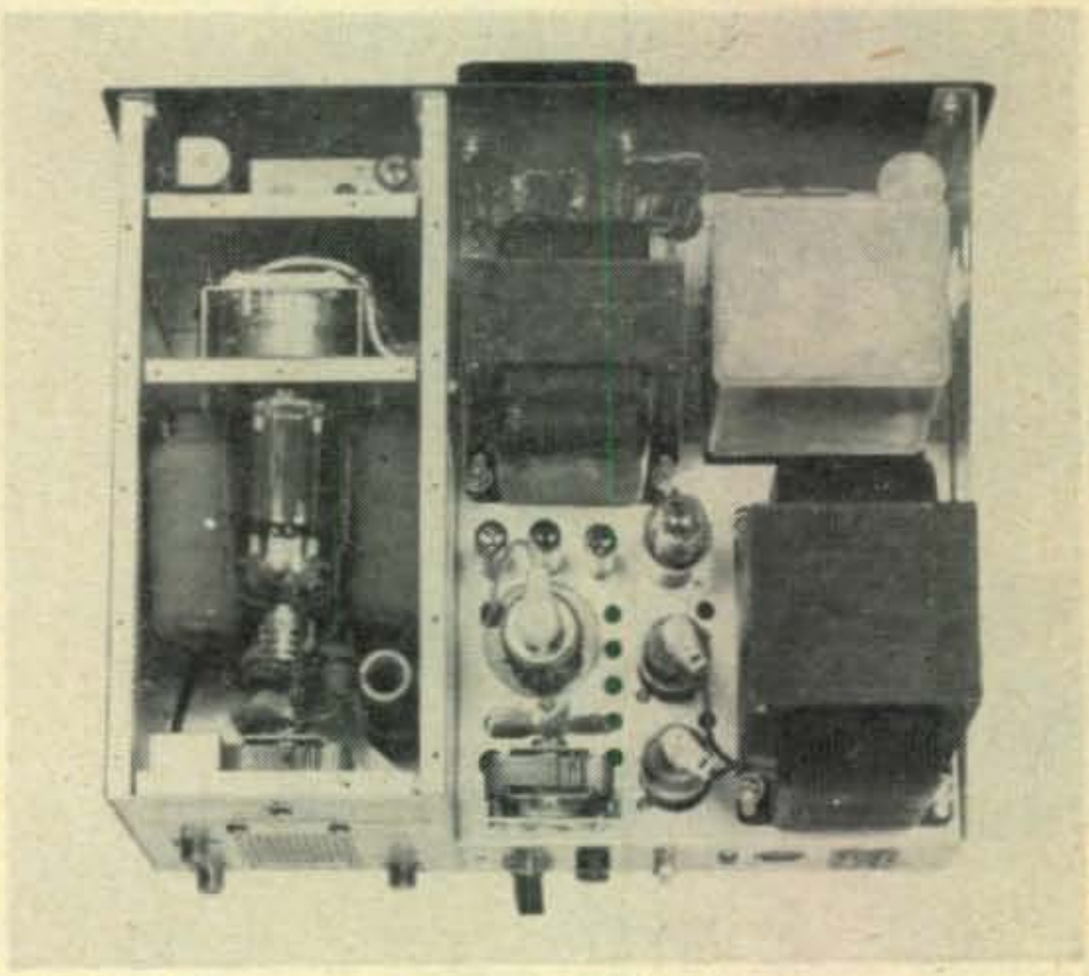
this mass of goo has been the reward of my faithful family for letting me operate while they stare at the TV. Anyone who has worked me during TV hours can now appreciate my lack of usual loquaciousness at that time.

Only the slightest of cross-hatching was visible using the 600L. I suppose if I *used* an antenna on my TV set that this would be cured too, but who ever heard of a ham who had a decent TV antenna? I use two short pieces of hook-up wire dangling out of the back of the set and throw them in different directions for different channels. At any rate all that dirty old TVI was gone with the 600L.

Wes Schum, W9DYV, who's Central Electronics has largely been responsible for the acceptance of SSB today due to his pioneering of commercial SSB exciters at practical prices, has a real interesting thing in this all band linear amplifier. The output circuit is broad-banded so that no plate or grid tuning is necessary over the entire amateur band. It is all relay controlled and protected against overloads. Wes seems to have thought of everything in this one. The front panel meter reads grid current, watts input, rf amps and reflected power . . . a built-in SWR bridge.

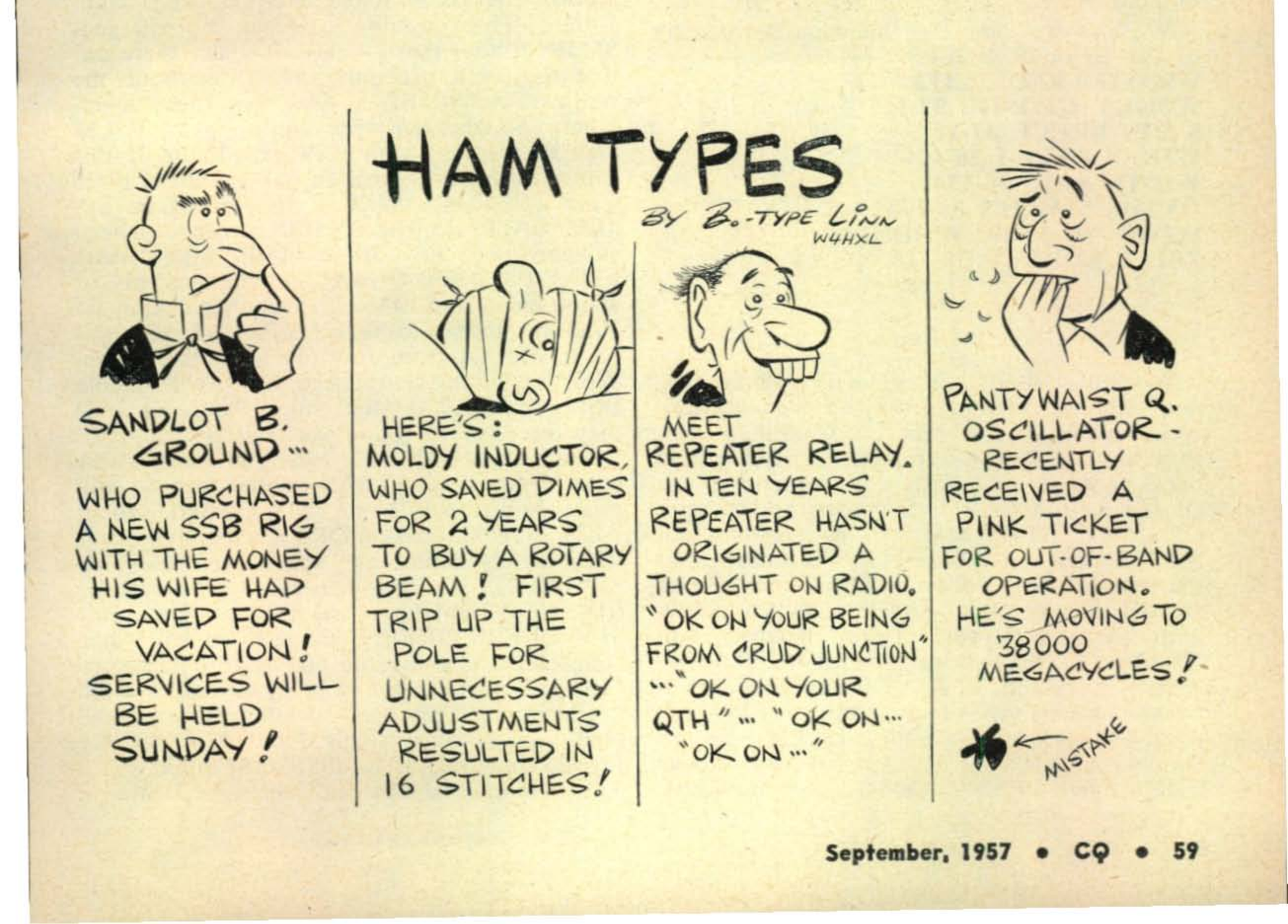
The 600L is designed to be driven with the Central 20A SSB exciter, but will work just fine with the Lakeshore Phasemaster II or Hallicrafters HT-30. Others require a power reducer to lower drive to less than 25 watts.

Using my trusty folded dipoles I have worked



all over the world on 75-20-15. Changing bands is a snap . . . as far as the 600L is concerned. You just turn the band switch and you are in business. Complete with figuring which end is up on another band it takes me about 15 seconds to move from one band to another.

Another thing I like about this linear is that it is all buttoned up tight so you can't get your pudgy fingers into the lethal parts. This plus interlocks may well save the life of a fuss-budget. ■



R. C. "Dick" Spenceley, KV4AA
Box 403, St. Thomas, Virgin Islands

Our heartiest congratulations go to the following station upon their achievement of WAZ:

No. 354 W4AIS George Tate 40-147
No. 355 VK3NC Norman Cameron 40-189
No. 356 WØANF Harry Harvey 40-219

W4AIS is the sixth W4 to attain this award while WØANF is the twelfth WØ. Of special note are the efforts of VK3NC whose top power is 8 watts. Norm is the eighteenth VK to hold WAZ.

We also welcome the following newcomers to the HONOR ROLL:
W9DYG FRED 38-172
WØGUV GEORGE 37-155
K2JTS BRUCE 37-111
W1ICW RALPH 36-161
W2OTE PHIL 36-154
OY7ML MARTIN 36-134
W2WZ AL 39-191 (PHONE)
ZS2AT BURNEY 36-118

DX Items

We are advised that W6UOU will be running 100 watts from American Samoa, KS6, commencing August 9th. . . Charlie Moser, W6HS, was due to voyage to Sydney and back between July 25th and September 4th aboard S. S. Monterey. Sun-spots and skipper permitting, W6HS/MM will be grinding out SSB contacts on 21 and 28 mc throughout the trip. Itinerary follows with all times being "local": Leaves Los Angeles, 10 PM, July 25th—Arrives Papeete, Tahiti, August 2nd., 10 AM—Leaves Papeete, August 4th., 6 AM—Arrives Auckland, N. Z. August 10th., 9 AM—Leaves Auckland, August 10th., 5 PM—Arrives Sydney, August 13th., 12 PM—Leaves Sydney, August 16th., 11 AM—Arrives Auckland, August 19th., 9 AM—Leaves Auckland, August 20th., 6 PM—Arrives Suva, Fiji, August 23rd., 8 AM—Leaves Suva, August 23rd., 5 PM—Arrives Pago Pago, Am. Samoa, August 24th., 7 AM—Leaves Pago Pago, August 24th., 12 PM—Arrives Honolulu, August 29th., 9 AM— Leaves Honolulu, August 29th., 5 PM—Arrives San Francisco, September 4th., 9 AM—Charlie will run a Hallicrafters HT32 rig and receive on a SX101. A Hy-Gain Topper Vertical Antenna will be used. There is no indication that there will be any operating ashore . . . KØDEX's trip to American Samoa is still a possibility in early September. He will be accompanied by Messrs WØFNN, W6VSS and K6EVR with the chance that WØHGR may substitute for WØFNN. Final decision may hinge on the outcome of W6UOU's scheduled trip to this QTH in August. . . HA5AM reports that scheduled HA DX'pedition to ZA-land is 'off' as local government would not authorize. HA5AM flies to ZA and may find it possible to get on for short periods from time to time. . . Czechoslovak expedition to ZA, which was due in early August, still stands. . . DL4RI says you can scratch ZA1KUN, he operates from Germany and signed LZ2KN a while back. . . DM2ACB's three day operation as ZA2ACB resulting in 171 contacts (June 12/15). Heinz will return home in August and QSL's may be expected in September. . . Signs of life emanate from AC4NC as evidenced by a phone QSO with KH6OR on July 7th at 8 AM HST. . . G3AAK reports LA2JE/P active from Hopen Island, 14025, This counts same as Spitzbergen. SM5BCE adds that LA2HF/P is also there and that they will probably stay throughout the summer. . . SP6BZ advises that there is another Spitzbergen possibility as SP5LM may go there with an IGY expedition. If this comes off he will work all bands and be there quite a few months. Call sign could be SP-5LM/LA/P. . . The PX1FC trip materialized as scheduled, July 5th to 15th, with Messrs F8FC, F8JD and ON4AU providing plenty of action on 21 and 14Mc. . . Jack, K2CPR, made good his threat to revisit FP8-land and was on as FP8AA from July 6th to 18th. . . Bob, W6ZVQ, of the San Diego Club, will handle QSL's for ZK2AD on Niue Island. ZK2AD may usually be found on 14076 or 14117 around 0530 GMT. He runs 100 watts. . . A letter from Guy, FL8AB, states that he will probably return to home station, F8UD, about April 1958. Off-and-on QRT's at FL8AB-occur when he is acting as "sparks" on the ship "JASMIN". . . The projected globe circling trip of W1GMP aboard the tahitian ketch "FIDDLERS GREEN" came to an end when rough seas, sickness and engine trouble forced George to turn back to a point 400 miles south of Bermuda. This business of sailing a small boat any distance single handed is not the joyride some people would like to think! ! . . . The Solomon Islands may again be heard in

the person of VR4JB who runs 30 watts, 14080 xtl. He is ex-ZC4JB/ZC6ND. See QTH's. Another VR4, expected on soon (if not already), is Dud Wright who will sign VR4DW. . . Dave, YJ1DL, is again active and puts a good signal through on 14021 daily from 1000 to 1100 GMT. . . C1KAA, claiming to be in Chungking, was contacted by IT1TAI on June 27th at 2245 GMT. . . W5LAK's projected visit to Goa, CR8, was stymied by a non-serious illness which laid him low in Karachi. Hope this still comes off. . . W7FNK/KP6 received his new call, KP6AL, on July 7th. He may be heard on 14080 0600/0800 GMT. . . VQØAA, Mafia Island, seems OK and is due on 14060, 0200 GMT, Saturdays. Seems like this could be a separate one if OK. . . W9HUZ heard that FW8AA's generator went bad and had to be shipped to FK8. This may mean a three month delay in FW8AA activity. . . VK4FE holds forth from Thursday Island, 1130 GMT, 14035 (not a separate one). . . W4IG has returned from a two year stay in Iran. His attempts to get a license there were fruitless. . . ZL1FE hears a job is open in the Kermadecs and hopes a ham grabs it. . . VQ4ERR reports that VQ8SP will show up shortly from Caragus Island (Can't find it on the map). Could be a separate one so keep your ears peeled. . . Martin, OY7ML, now OZ7ML, says that he will be back in the Faeroes in August. . . I1ZGJ planned activity from San Marino from July 20 to 30th while I1ABW expected to run 30 watts from San Marino during second week of August. . . W9NLJ/VF1 will be on from Prince Edward Island (A must for the WAVE award) between September 26th and October 2nd. This includes the W/VE contest weekend of September 28/29. All bands 3.5 thru 28 will be used with CW, AM and SSB. QSL via Bureau or W9NLJ. . . LU5AQ reports ZD1NWW on 14060 at 1830 GMT. See QTH's . . . W8PQQ has logs for AC4PN covering period from April 8, 1955 to June 2, 1956. Chhawna hopes to be on shortly with BC-610 or 150 watt rig plus beam. . . Gunnar, EL20, keys from the town of Sacrepea in Liberia. He returned to SM-land in July and will be back in EL at the end of the year. See QTH's. EL20 is SM4GL. . . Scanning the West Gulf Bulletin we see that VS4BA's name is Dick Hawkins, he runs 100 watts to parallel 807's and he is on 14086 Mondays. See QTH's. . . CEØAC and CEØAD are shutting down for good. QSL via CE3OK. . . HS1A should have SSB by now. . . W7GFM left for VQ5-land, with gear, and hopes to be active for a year if license is granted. . . VR3G QRT's and will be back at G3KDE. . . More news on LA2JE/P (Hopen Island/Spitzbergen). His name is ODD and he will be at the weather station there until July 1958. He will work 3.5, 7 and 14 with a power of 20 watts. His freqs are xtal. His cycle of activity is as follows: One week, 1200 to 1500 GMT, then QRT three weeks.

SM5BFR, Charlie Svard, Katrineholm, Sweden, runs parallel 807s at 150 watts on A3 and 200 watts A1 plus Gtloso V8O. Rx is SX-23 with converter. Charlie has worked 122 countries and 40 zones.

W7GXA, Joe Naemura, was first licensed in 1938. Present setup consists of a 6C21 (45OTL) final to a three element telrex beam 85 feet up. Receivers are a SP4OOX for phone work and a home brew job for DX. Joe has worked 240 countries and, in June, was due to add the letters "M.D." after his name. QTH is Portland, Oregon.
(Photo courtesy Willamette Valley DX Bulletin)

VS1EW, Herman Baker, looks on as Rundy, W3ZA, tests police radio gear in the jungle near Kota Tinggi, Johore, on July 1st. Rundy hopes to be on, in the not too distant future, with a nice juicy XV call in Saigon, Viet-Nam.

Then a week 2100 to 0200 GMT, then QRT three weeks, then cycle is repeated. Only on cw now but some phone is possible later. . . W6ZEN advises that ZK2AB (The good one) is back on the air, thanks to help from ZL1PA who sent him a VFO and who is now building him a new final. QSL's should go to W6ZEN with self-addressed stamped envelope. . . We understand that VR2CZ will relieve VR3B when he leaves Fanning this Fall. . . W2KAN was YI2RP's first contact on SSB, 14 mc., June 15th. See QTH's. . . W4DQA/KS4 went QRT on 6/10/57. QSL to home QTH. . . More on LA2JE/P from LA5HE: LA2JE/P and LA2HF/P will use same rig, a CO-PA with a 616 in the final, and will be on every third week from 2200 to 0300 GMT (He was active during week of July 6 to 13). Crystal frequencies are: 3.5 mc, 3551/3588 CW, 3720/3737 AM. 7 mc, 7000, 7010, 7025, 7040, 7038, 7050, 7075 CW, 7075, 7100, 7105, 7125, 7127 7144 AM. For 14 mc double from 7 mc freqs. Other days look for him between 1300 and 1600 GMT. QRG on 14 mc, to date, has been 14020. No dope on operating times of LA2HF/P. Correct name for this country is SVALBARD. Spitzbergen and Hopen are just single islands in this group. . . K2JYH reports hearing KS6AD, 14060/70, at 0800 GMT (July 15th) and KG6IG (Bonins) 14095, same date and hour. . . WØANF advises that OH2RD/Ø was due on from Aaland August 7th. . . From the Ohio Valley Bulletin we read that AC4NC is planning to get on SSB with a KWS-1. This should speed up the inevitable AM switch to SSB no end! ! ! CR8AB was heard working W8ZY on 14 cw. Said he was W5LAJ (W5LAK)—??. Relief ship arrived at Amsterdam Island on June 3rd. Guy left for France and new op, Joseph, will carry on at FB8ZZ. . . The South Calif. Bulletin tells of one of those rare occasions where two countries were worked with one QSO. Seems that Arkie, W8NBK, was working ZD4BQ Gold Coast at the precise moment

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G5GK	163
W6BUY	163
W6DUB	163
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I1IR	162
W6PDB	161
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VE3EK	160
W6PUY	160
JA2KG	160
KH6MG	160
W6ONZ	160
OH5NK	159
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WØOUH	157
G3TK	157
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ZS6FN	157
I1AY	157
W7BE	156
W6AOD	156
KH6IG	156
DL1DC	155
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W8JBI	250
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W4EEF	175

Last complete HONOR ROLL appeared in the May issue.
Next complete HONOR ROLL will appear in the January issue.
Note: Stations who have not made a change in totals during the last two years, other than WAZ members, will be deleted from next HONOR ROLL. Reinstatement will be made upon receipt of new total.

Honor Roll for WAZ

S B

Bob Adams, W3SW••
919 McCeney Rd.
Silver Spring, Md.

COUNTRIES WORKED
(Two-Way SB)

W2KR	86	VE2GQ	70
K2AAA	81	W6UOU	70
DL4SV	76	W2EWL	70
W3BZ	76	W2JXH	70
W3ZP	75	HR2WC	70
G3MY	75	W5HHT	70
G6LX	75	W3HN	69
ZL3IA	75	W8JXM	65
ZL3PJ	75	K2GMO	65
ZS6KD	75	W6IAL	65
W4INL	75	OH2OJ	64
VE4NI	75	W1EQ	64
VK3AEE	73	CN8MM	62
W2CFT	73	F7AF	62
K6GMA	71	W9GPI	62

Although DX conditions have been generally poor throughout the world, most of the leaders in the "Countries Worked" list managed to find a few new ones.

DU7SV, Volt has been very active and has given many stations a new country. He reports that several new DU stations will soon be on SB.

W4INL, Bob increased his total to 75 by working VP2VG, LU7AS, HB9FU/FL, and YI2RP. YI2RP is a newcomer to SB and is on 14,301.

W3HN, Sam is rapidly catching up and by working VP5MU and EAØAC is up to 69.

JA1ANG, Harry wrote a long letter to advise that he is hearing many East Coast SB stations including W3SW, K2KGJ with strong signals via scatter-long-path. Harry is located on the wrong side of a mountain and is unable to work the short-path. He suggests W2 and W3 should point their beams to KC4-land as late as 1200GMT for excellent KA/JA contacts. JA1ANG is rock-bound on 14305 and 14315 with 50 watts, and a filter exciter. Harry reports HS1A, Ken is on SB using a 20-A barefooted. His frequency is 14315 and 14327 and HS1A is heard each evening around 1400GMT working W-6 and W-7. A new linear is under construction. VS4JT now has VS6AZ's 20-A exciter and 75A-4 receiver so we will soon be hearing a new country. VS6AZ is awaiting a new KWS-1.

Ray, of KA2YA is returning to the States July 17th, and we will all miss his well known voice. Good luck Ray in your next assignment.

K6AXS, Charlie has been assigned to England for the next three years and is planning some DX-peditions while in Europe. Charlie has a complete SB station and is considering the idea of loaning this equipment to British operators of stations in the Channel Islands, the Isle of Man and Ireland in order to encourage SB activity in these countries. Applications have been made for a license to operate in Andorra, Crete and San Marino. Our DX Century goal will soon be possible with such enthusiastic supporters.

W2BKU, Sam is operating twenty SB from his automobile during his trip to Mexico City, and is working all the boys with no effort. Sam said he could never have accomplished this on AM.

Its, W9IVO returned to his home in Hawaii for a three weeks vacation and is very active on twenty using a new HT-32 and HT-33. His call is W9IVO/KH6.

Stu, W4HB is on his annual vacation in Michigan operating SB on 20. W4GL, Dick has taken his beam down and is moving to a new home in Florida. Danny, W2GG/4 is active with his HT-30 barefooted. We know it won't be long until the final is unpacked and operating. W4-FH, Bob has a new grounded grid linear. We wonder whether Fred, W4CF ever sleeps as he is heard so often.

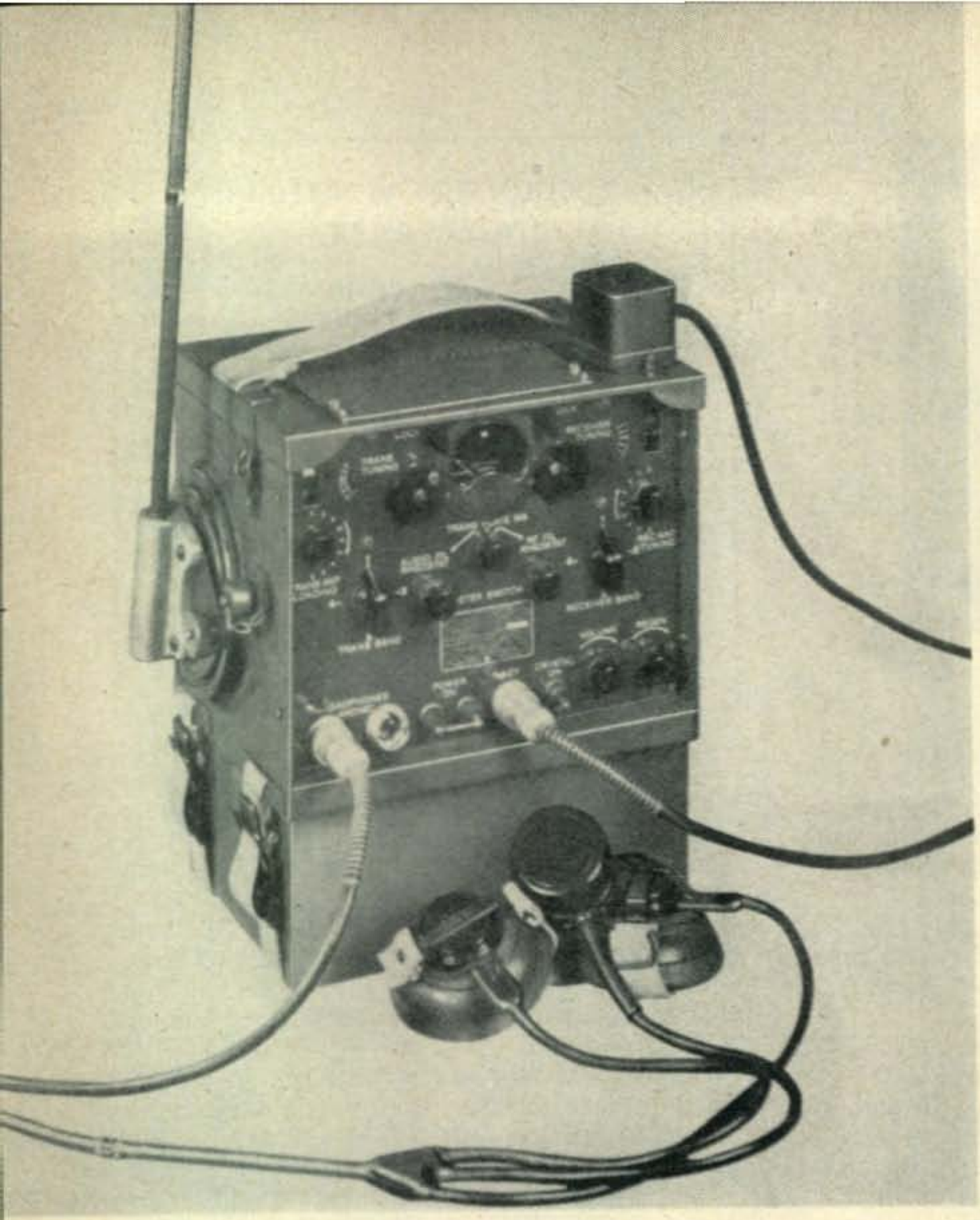
Gibby, W8LJ is vacationing in Maine, and many of the 20 meter gang are away for their vacations.

We were surprised to find so much activity on forty SB. There are many operators who use this band exclusively with excellent results. Listen around 7205 any evening and you will be amazed.

The SB Dinner to be held during the National Convention in Chicago is rapidly taking shape and promises to be an outstanding event. Fred Schnell, W4CF will Emcee. Many DX SB will attend including BV1US and YV5FL etc. See you there.

Reg, W6ITH has been active from his two stations, FS7RT and PJ2MC. Complete stations are maintained at both QTHs consisting of KWS-1 and 75A-4 and W3DZZ tri-band beams. Reg sends beautiful hand-painted QSLs to all who send him a card.

[*Continued on page 99*]



the TBY conversion

Donald L. Stoner, W6TNS
P. O. Box 137
Ontario, California

I must confess that the tender plea from Larry, W9RHV, last month did it. His touching letter plucked my heart strings and so I can do nothing but comply with his request. In case you missed his soul wrenching communication, it went something like this: "Yes, pronto. TBY conversion. Only portable rig at W9RVH. Summer pickin'n, too fat for baseball. Help." Do you blame me? Nothing else to do. Here's the TBY conversion data.

Actually, the CQ gang has been doing a lot of kidding about the TBY transmitter and receiver, but it's all been in good fun. The TBY is no harder to convert or no more trouble to use than any other piece of war surplus equipment. It's simply one of those units that everyone has laying around and few people know how to convert them. I have converted and used the TBY (and another boat-anchor called the Mark II, B-19) with good results. Several hams have written to say that they were sold on the ole TBY and why don't I do a conversion.

A brief explanation of the TBY is in order for the benefit of the newer "surplusers." The unit is classified as a VHF transmitter-receiver and was used by the Navy and the Marine

SURPLUS

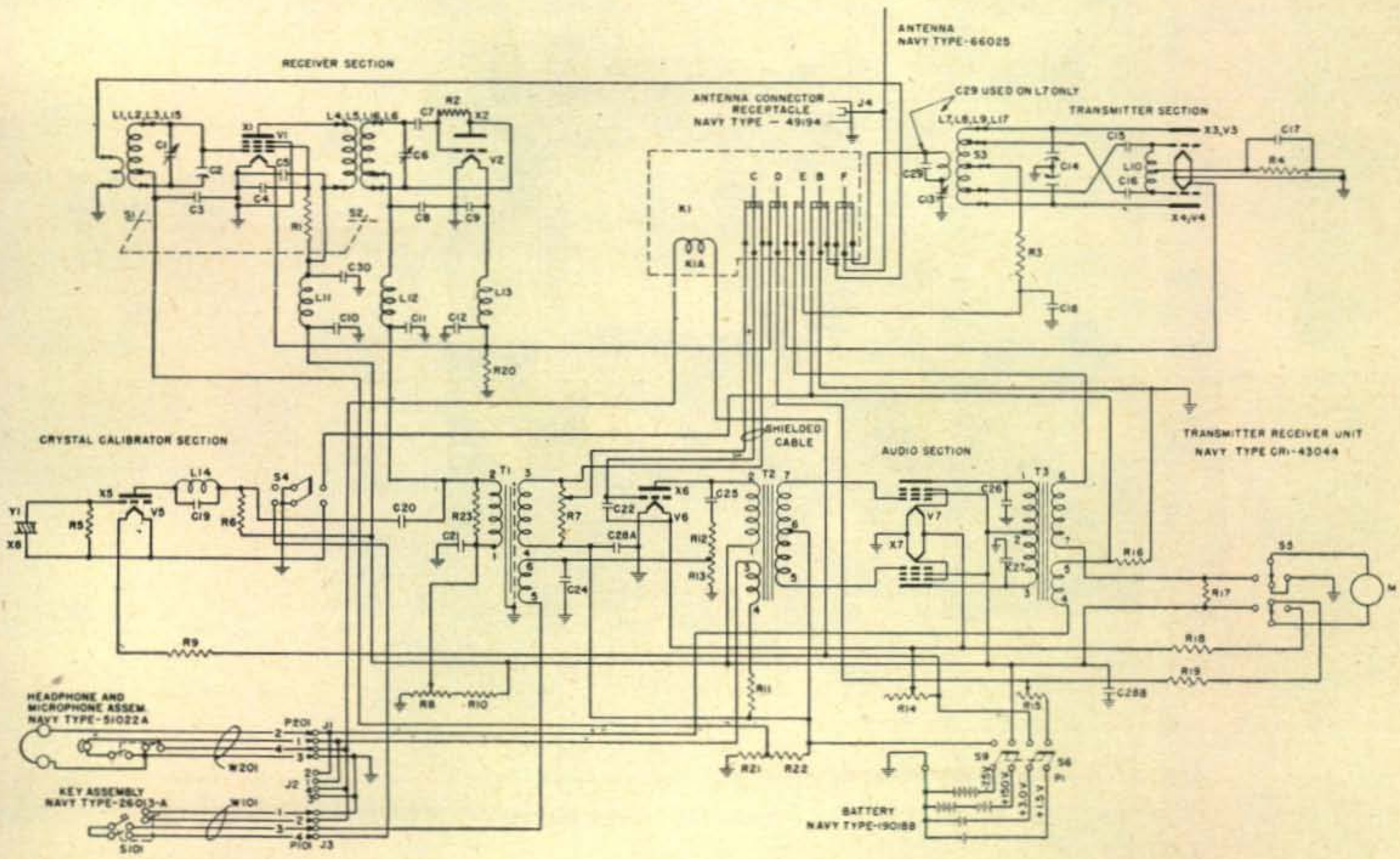
Corps during WW II. The equipment provides two way communication by either voice or MCW on four bands between the frequencies of 28 and 80 mc. With a little work, the TBY can be converted for xtal control operation on either ten or six meters. The tubes used are capable of working on the two meter band, so a conversion to this frequency is possible. The receiver is of the super-regen type and is extremely sensitive. Quite often, East Coast stations can be received on the six meter band out here. I have heard that some Technicians have worked back east with them, but don't pin me down to names and places. The antenna, a whip type, feeds a type 959 1½ volt pentode r-f amplifier. The incoming signal is amplified in this tube and passed on to a type 958 detector tuned to the fundamental frequency. The audio output from the detector drives a type 30 1st audio amplifier which in turn drives the 1E7 push-pull output stage. The receiver requires no converting as such. Simply apply power to the receiver audio section and it works.

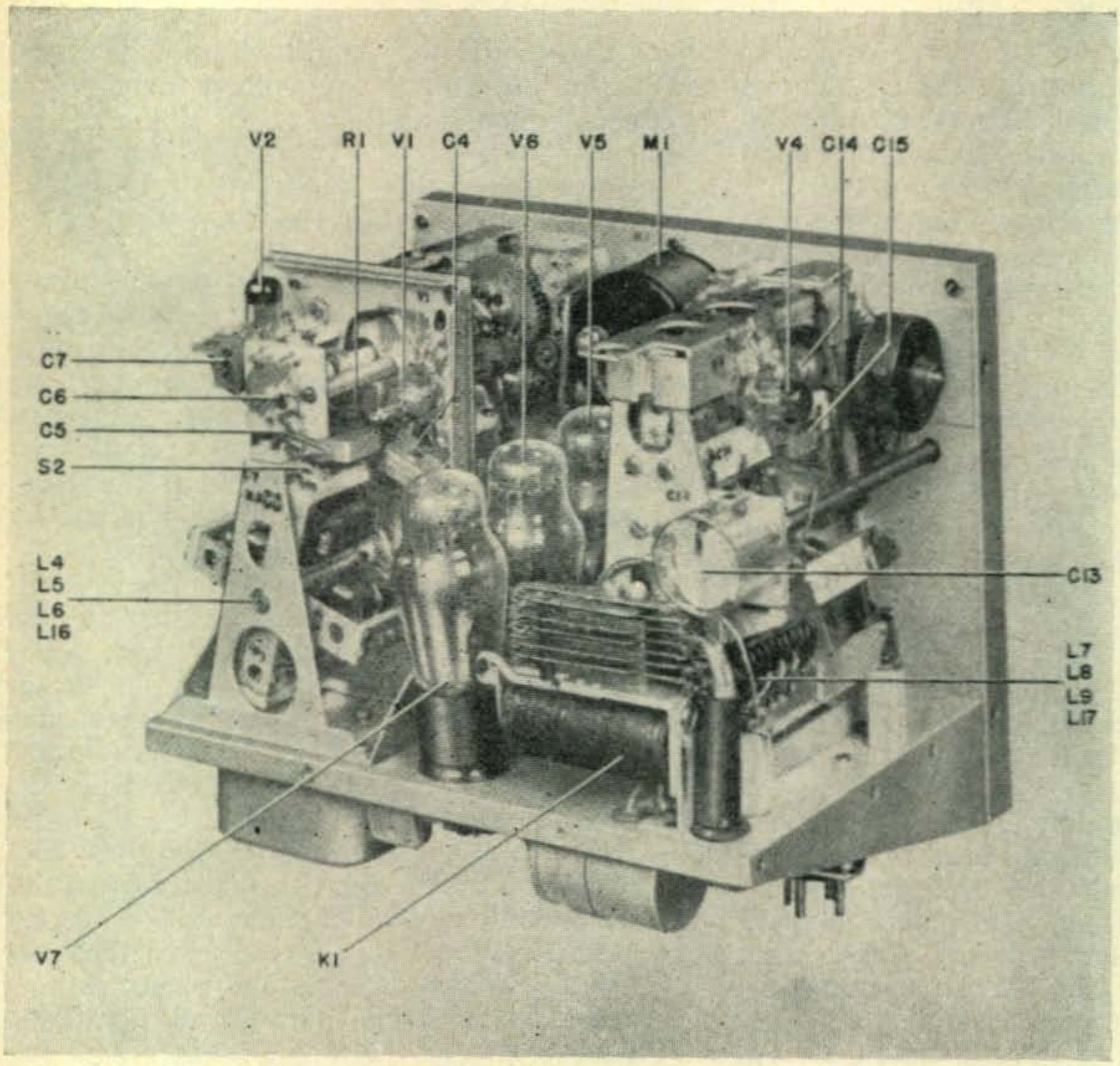
The transmitter is a different story. The stock TBY uses a pair of 958's as (horrors) a modulated oscillator. These tubes will put out approximately .75 watts on MCW and about .5 watts on phone. When the band is open, that is enough to do the trick. When transmitting, the 30 and the 1E7 become the speech amplifier and modulator tubes. Needless to say, the modulated oscillator is illegal and in this modern day and age, of 50 kc i-f's, probably no one would be able to copy you anyway. Not only does the modulator amplitude modulate the 958's, but since they are voltage sensitive, it frequency modulates them also. Enter crystal control.

Converting the TBY

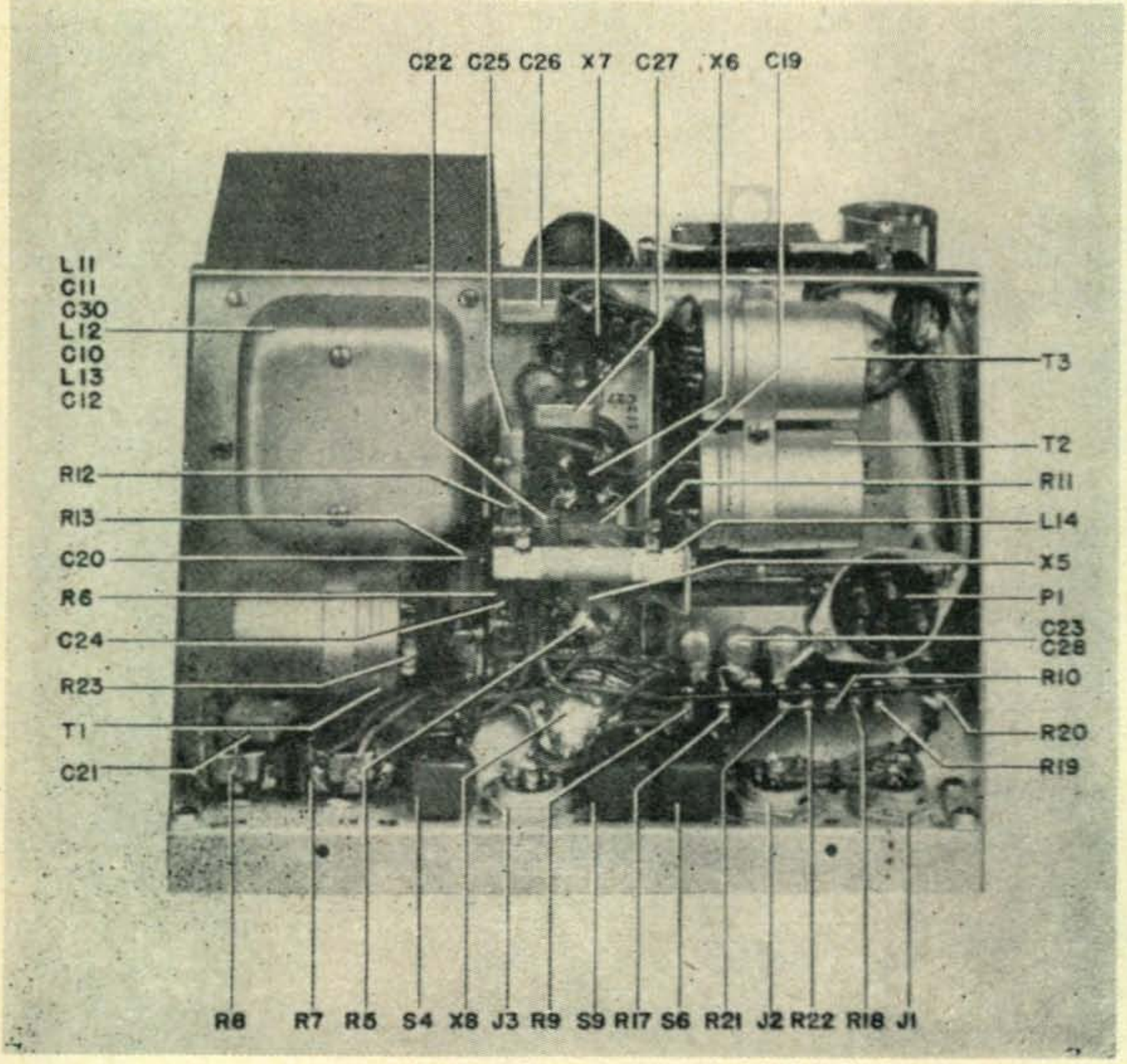
After we got the TBY up on the work bench, it was fired up with dry cells to check it out. This might also be a good idea for you, if you are not sure of the condition of your TBY. Sure enough, it worked right off the bat. Immediately, I plunged into the task of converting it to crystal control since the FCC frowns on modulated oscillators. The circuit of the crystal control adapter is shown in fig 1. A single 3A5 is used as a harmonic oscillator and doubler to 50 mc. The first step in converting the TBY is to remove all the tubes to avoid breakage. Remove the 4 pin socket associated with the 30 crystal calibrator circuitry. Be sure you don't get the 1st audio 30! Remove the components associated with the crystal calibrator, Y1, R5, Y5, L14, C14, R6 and C20. Remove the wires that connect between Y1, Y5 and S4. In place of the 30 socket, mount an adapter plate drilled out for a 7 pin miniature tube socket. Install the coils L1 and L2 as close to the tube socket as possible to keep the leads short. Install a two lug tie point close to the 7 pin socket and L1. Connect a 4.7K resistor between the two lugs. One end of this resistor will connect to the

Fig 1. Schematic of unconverted TBY





Left Rear view of the TBY interior



Bottom view of the TBY interior

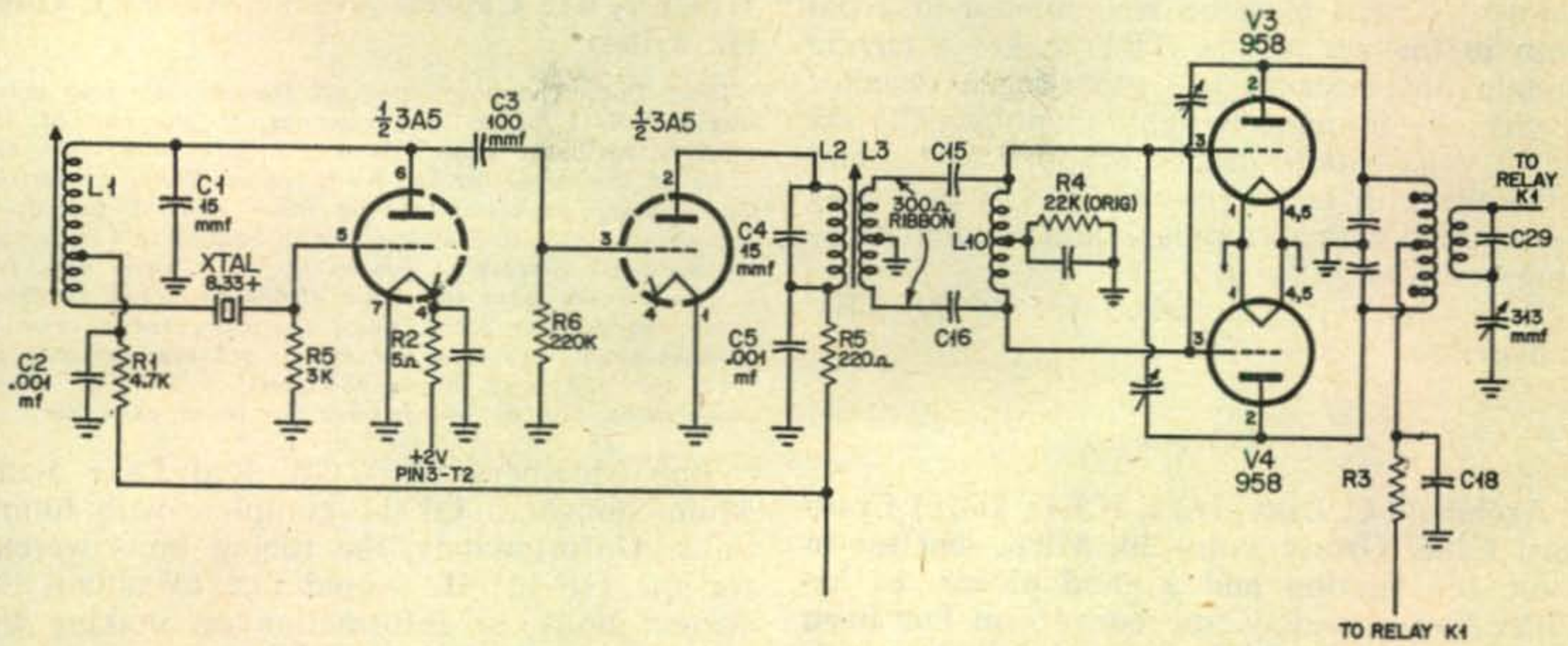


Fig 2. The converted transmitter section of the TBY

tap on the coil and the other end will go to the TBY B plus circuit (pin 1 on transformer T2). Once this has been done, wire in the rest of the circuit shown in fig. 2. The next job that confronts you is to change the MO to a final amplifier. Locate the two feedback capacitors, C15 and C16 that form the feedback loop. Disconnect these capacitors from the turret coil terminals and connect them to a two lug tie point mounted near the two 958's. Drill an elongated hole in the chassis near the new 7 pin socket large enough for a length of 300 ohm line to pass through. Connect the two leads at one end of the 300 ohm line to the capacitors, C15 and C16 that couple to the 958's. The other end connects to L3 as shown in fig 2, the converted transmitter section. Quite a few hams had difficulty with the final oscillating. This is because the 958's are now operating as a push-pull PA and must be neutralized. To make neutralizing capacitors, twist two pieces of #22 plastic insulated wire together for about 6 twists. Connect one end of the "capacitor" to the plate of V3, and the other end to the grid of V4. Connect one end of the other "capacitor" to the grid of V3 and the other end to the plate of V4. These capacitors will be adjusted later. Locate R4 and change it to 22K, ½ watt.

Front panel modifications consist of replacing the mic and headphone connectors. Note the parallel connected jacks, J1 and J2. J1 was replaced with PL-68 type jack, 3 connects to the sleeve, 4 connects to the tip and 1 connects to the ring. J2 was replaced with an open circuit headphone jack, the sleeve was connected to 3 and the tip was connected to 2. (numbers refer to J1 and J2 nomenclature). In addition, a wire was connected between pin 4 (of the original J1) and the unused switch S4. Now, flipping this switch will trip the relay so that it is unnecessary to keep the button pressed on the microphone while transmitting. This completes the conversion of the TBY.

Tuning up

Apply power from dry batteries or from a battery eliminator to the TBY. The receiver should take right off. Check and make sure that the volume or regen. controls are not turned off. Connect a 2 volt, 60 ma. bulb between antenna and ground. Connect a voltmeter from R4 to ground with the negative terminal on R4. Apply power to the transmitter by depressing the mic button or by throwing switch S4. Adjust L1 and L2 for maximum negative voltage across R4. This is your grid drive. The voltage at this point should be 20 volts or better. Next, adjust 1 TRANS TUNING and TRANS ANT LOADING for maximum brilliancy of the 2 volt bulb. Next, listen to your signal on a communications receiver. It is possible that you will hear parasitic oscillations in addition to your crystal controlled signal for the neutralization capacitors have not been adjusted. To set these capacitors, disconnect the lead between R3 and relax K1. Couple the antenna from the TBY to the input of your communications receiver. Tighten or loosen the "gimmic" capacitors until the signal in your receiver hits a null with the 3A5 turned on. This is the point where the 958's are neutralized. Reconnect R3 to K1.

You are more or less at the mercy of your junk box for the power supply for TBY. If you work for National Carbon Co., you can operate it from dry cells. Some lucky people might have the original wet cell power supply or even a 110 volt conversion unit (yes, there were a few of these manufactured for the TBY but impossible to find). The TBY will require the following voltages and currents to the 5 pin power connector on the bottom of the chassis. Pin 1, minus 7.5 volts at 30 ma., Pin 2, 1.5 volts at 190 ma., Pin 3 common, Pin 4 plus 3.0 volts at 360 ma., and Pin 5 plus 156 volts at 35 ma (approx). A supply could be constructed using a 6 volt 1 amp transform-

er with selenium or copper oxide rectifiers. The filament circuit must be well filtered to avoid hum in the audio. The TBY makes a terrific mobile unit because the super-regen detector is virtually immune to ignition noise. The six or 12 volts battery can be dropped to 1.5 and 3.0 volts with series resistors and B plus may be supplied with a vibrapack and suitable dropping resistors.

Well, that's it, you asked for it, the TBY conversion.

Letters

Archibald C. Doty, Jr., K8CFU, 16817 Cranford Lane, Grosse Point 30, Mich. sent me in some information and a good picture of his TBY. Unfortunately, the conversion has been used elsewhere and I lost the picture, bad luck all the way around. Arch built a plywood bottom for his TBY which contains the batteries, the mic. and phones.

Mel Roberts, K6CNM, 110 So. Mansfield, Los Angeles 36, Calif. sent us some of information on the conversion of the TBY, excerpts of which I used in the foregoing conversion. He uses a long plastic tuning wrench and 2 volt, 60 ma. pilot lamp for tuning up.

W1DFS, 24 Orient Avenue, Melrose 76, Mass. sent us some conversion data on the TBY, indirectly. His idea is to replace the battery tubes with 6 volt types (954 for the 959 es 955 for the 958's). This would make the TBY a much better mobile rig and simplify the power supply.

Robert Demmler, 121 Linhigh Avenue, Baltimore 6, Md. also requested information on the conversion of the TBY as did many others.

Jim Towle, KN8EWO, RFD 3, Stanton, Michigan writes:

Dear Don, would you please give me the information how to hook up a BC-455 receiver as a Q5'er? I've heard a lot about Q5'ers but I'll be darned if I can find out how to hook one up. Thank you. Yours truly, Jim. *Well Jim that shouldn't be too much of a problem. First of all, the Q5'er is not the BC-455 (3-6 mc) but rather the BC-453 (.19 to .55 mc). The CQ Command Set book contains conversion information on this item, as does The Novice and Technician Handbook. My article, The Novice Q5'er (Jan. 56 CQ) also give conversion info that should be of interest to you.*

Jim Tucker, KØCYM, 132 Templin Park, Iowa City, Iowa noticed W9GXC's letter complaining of shorting 6X5's. He writes:

I built the first rig I owned using 6X5's as bridge rectifiers to supply power for a single 6146. I also popped 4 ea. 6X5's before I finally wised up and put in 6W4's in the circuit with appropriate wiring changes on the sockets. I now have 925 volts output with no breakdown or apparent damage to the 6W4's! 73's Jim.

Thank you for the advice and information Jim. There is a damper for color television that has just twice the current rating of the 6W4's but I can't find the number of it. Four of these jugs should really make a power supply.

An SOS was received from Robert E. James, W8CZV, 415 Cypress Avenue, Akron 1, Ohio. He writes:

Dear Don, The conversion of the BC-645 was going nicely until I broke the capacitor at the end of the receiver oscillator lines. Have you any idea what the value of the capacitor is? Also, the set I am converting has another capacitor at the other end of the lines, not shown on your drawing in CQ. Should this capacitor be removed? Sincerely, Robert. *Oh me! Sorry Bob, but I do not know what the value of the capacitor is. Since these are quarter wave lines, the capacitor represents a short a 450 mc. Why not try to get the oscillator on freq. with 50 mmf across the ends of the line. Work from there. No, do not remove the other capacitor.*

Bob Mossberg, WØZCB, Red Lake Falls, Minn. bought a GF-11 complete with tuning units. Unfortunately, the tuning units weren't for the GF-11! He would like to obtain the correct units, or information on making the units. Can anyone help him?

I received an interesting letter from Bud Loewenstein, W6TEG, 1054 E. First St., Long Beach 2, Calif. Bud has had plenty of experience with the ATJ television cameras. As evidence:

Dear Don, I was a civilian employee of the Wright Field Electronics Insp. stationed at Farnsworth. Our job was to inspect and help in anyway we could. I was sent to RCA to type test this TV equipment. I have tube building equipment at home and have offered to build TV pickup tubes for local hams if they would use them and I have had *no takers.* Perhaps there will be more interest now. . . . *Bud wrote a lot more and unfortunately, we just don't have space to include it all. He has several good ideas on flying spot scanners for low cost ham TV. If you are interested in the subject, why not drop him a line.*

Mike Barlow, G3CVO/TV writes:

Dear OM, Re CQ-TV. I gather from the inquiries that you omitted to give the costs involved and I wonder if you could insert them somewhere to save a lot of writing. "An Introduction to Amateur Television Transmission," 50 cents incl. postage. "CQ-TV," back copies at 50 cents each incl. postage and $2.00 per annum. We have Vidicon camera tubes available to BATC members at $70.00 plus postage. They are identical to the RCA 6198, but regret no coils or bases. Payment may be in cash, postal order, check or Unesco coupons payable to the British Amateur Television Club. The Hon. Secretary is D. W. Wheele, G3AKJ, AMIEE, 56 Burlington Gardens, Chadwell Heath, Essex. Inquiries for tubes should be made to me, G3CVO. 73's and mni tnx, Mike. *Sorry to cause you excess writing Mike, but I didn't have the costs involved, something about pounds or some such thing- Hi. Anyway this should clear it up. By the way, I have a 6326 high sensitivity color Vidicon that I will swap for a 40 foot tower. Any takers?*

James Russell Jr., 1195 Eastern Avenue, Schenectady 8, N. Y. would like to obtain a schematic for his RAX receiver.

Dear Don: I have an APN-4 indicator that I would like to convert to a test bench oscilloscope. Could you tell me how to secure a conversion schematic? Yours A. L. Klingen #8 Lincoln Avenue, Waynesboro, Pa. *Sorry OM, but I don't think that you can make an oscilloscope out of the APN-4 unit for less than the cost of the most expensive job.*

William Landau, 30 Main St. Englishtown, N. J. also has a problem. He writes,

[*Continued on page 94*]

W6CQK/2 in Summit, New Jersey. Transmitter is a DX-100 with W6AEE fsk circuit, receivers are two HQ-129x, and the converter is a W6CQK-Diversity. Another i-f type of converter is in the rack, and so is a WØHZR 'scope-type of tuning indicator. Not shown is a Model 14 Typing Reperforator and a Model 14 Transmitter-Distributor.

RTTY Meeting. Foremost on the agenda this month is the news of the very *first* National (and third Chicago) RTTY Meeting. The Chicagoland gang invites you to attend. The meeting will be held in conjunction with the 9th annual ARRL Convention on August 29th through September 1st at the Palmer House in Chicago, Illinois.

Many RTTY technical sessions with talks and demonstrations are planned under the able direction of the well known Boyd "BeeP" Phelps, W9BP/WØBP. The latest in ham RTTY equipment will be shown in actual operation. It is hoped to have some kits available for adding the automatic carriage return and line feed feature to the Model 26 machine.

Your RTTY Editor will be there, complete with *CQ* subscription blanks and a suitcase full of *RTTY Handbooks.*

It is urged that convention reservations be sent in as soon as possible. The advance registration for the ARRL convention is $10.50, which includes the Sunday evening banquet. (Without the banquet the registration fee is $6.50.) Address for ARRL convention registrations is P.O. Box 6797, Chicago 80, Illinois.

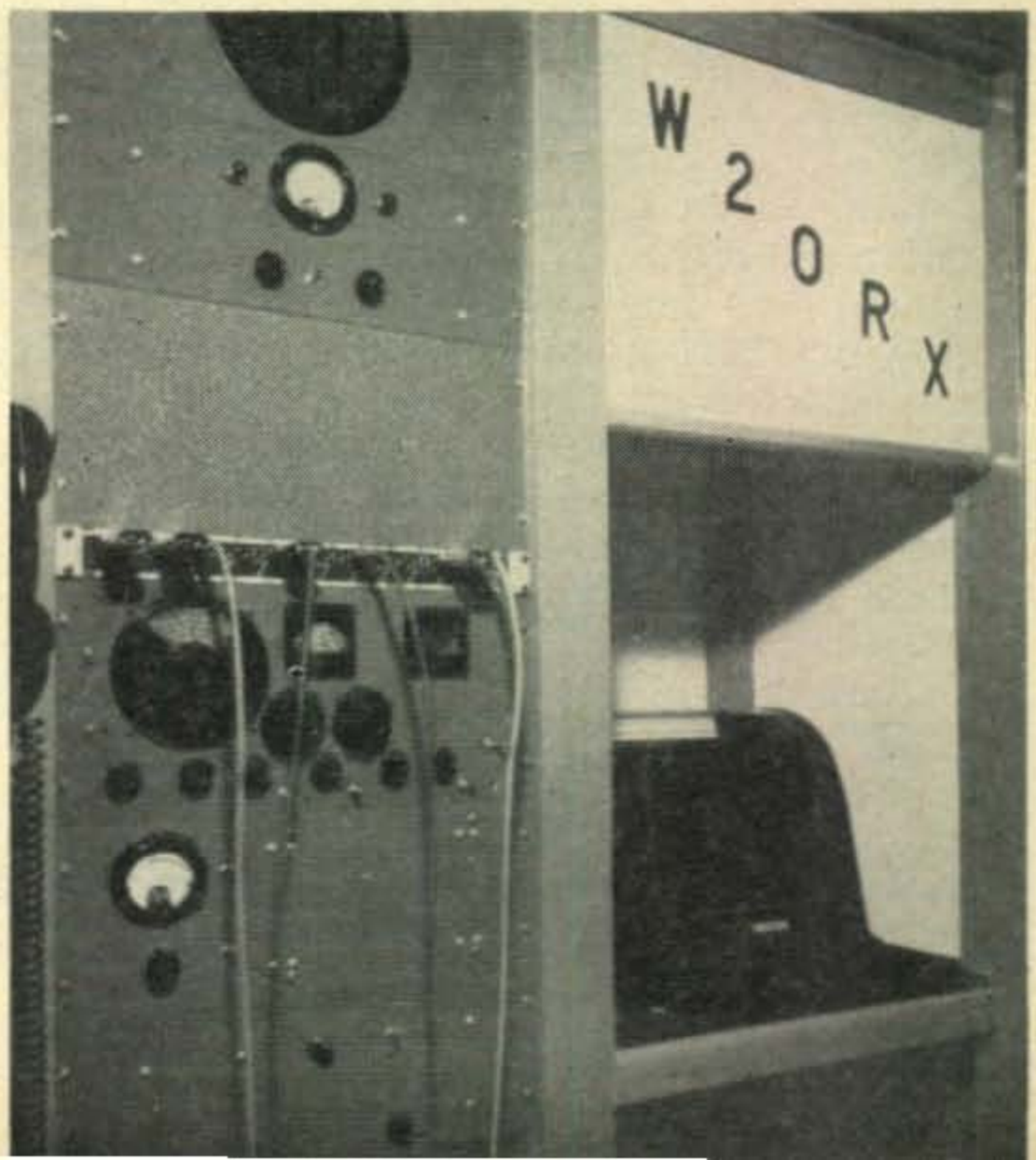
On Saturday, August 31st, our own RTTY Banquet will be held in a meeting room which has a capacity of 50 people. To ensure your place it is *essential* that your reservation reach the RTTY Committee as soon as possible. Send $6.50 to Ray Morrison, W9GRW, 8029 Keeler Avenue, Skokie, Illinois, for your RTTY Banquet reservation. *Among the many attendance awards at the RTTY Banquet is a working Model 26 Teletype machine!!!*

From personal experience, from the first Chicagoland RTTY Meeting in 1955, I can say with authority that the Chicago RTTY gang does a real fine business job with these meetings. Besides the excellent job of organization, these fellows are really hospitable. The RTTY Committee this year consists of George W9SPT, Ray W9GRW, BeeP WØBP, Bob W9JBT, Burt W9OCV, Bob W9TCJ, and Bert WN9CNY.

Byron H. Kretzman, W2JTP
16 Ridge Dr., High Hills,
Huntington Station, N. Y.

Autostart

Several months ago I mentioned the 2-meter autostart net that is in operation in Livingston, New Jersey, not too far across the river from New York City. As listed in the box of Area Nets at the head of your RTTY column, the



Preview of W2ORX, Livingston, New Jersey

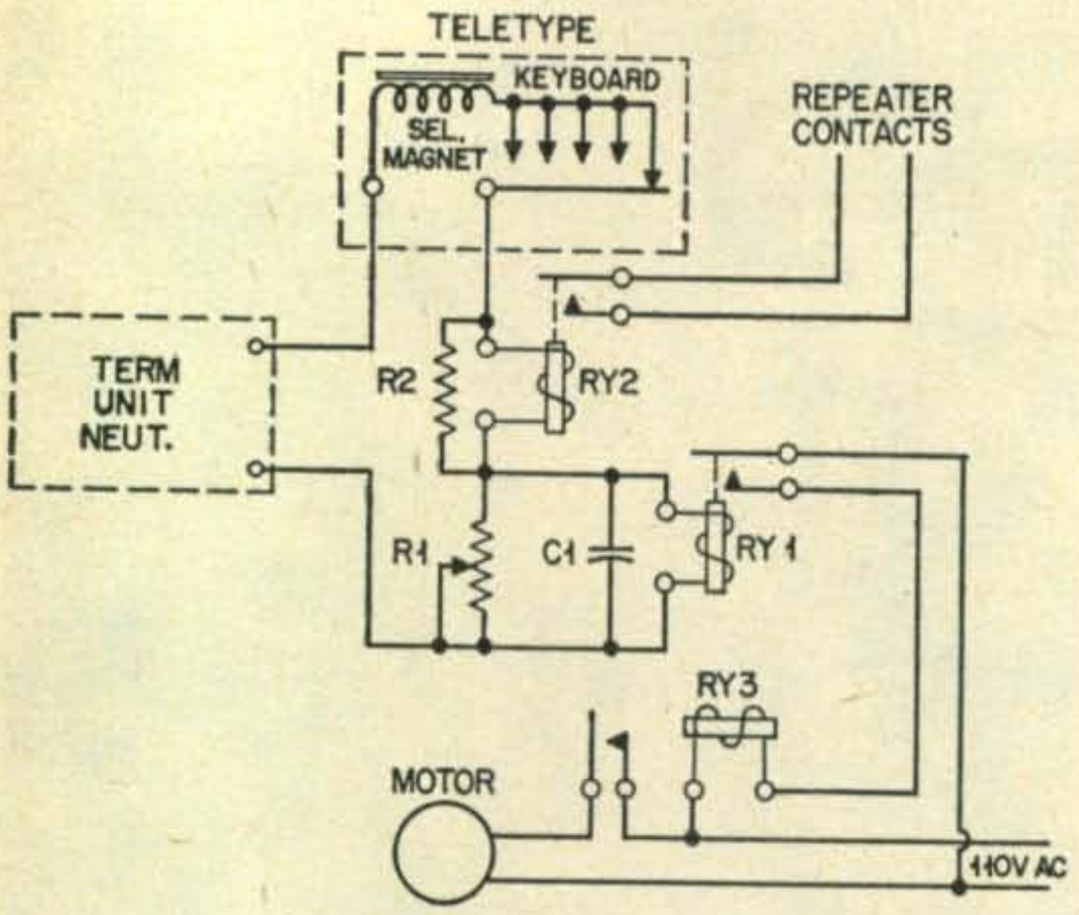


Fig 1—Livingston Autostart Circuit

Livingston RTTYers operate on 146.3 Mc. They use afsk, with the standard tones, 2125 cycles for *mark* and 2975 cycles for *space*. All the net members monitor the 2-meter frequency continuously. All machines can be started up, made ready for copy, and shut down at the end of the message, at any time.

Dick Wells, W2ORX, of the Livingston group, has supplied us with the details of just how this simplified autostart system works. Bear in mind that the receiver and converter, or terminal unit, must be on.

Fig 1 shows the schematic diagram. This circuit was designed to furnish a simple radio-teletype autostart and regenerative repeating system. The autostart permits the motors of all machines to be shut off during no-signal periods. A *mark* signal of at least one second duration causes all motors to turn on. The regenerative repeater permits the received signal to be monitored or retransmitted as d-c pulses or as afsk or fsk signals. Reshaping is automatic.

The autostart works as follows: The terminal unit, shown on the diagram as having a d-c neutral output, furnishes current on *mark* which is used to energize the apparatus in the d-c path. When the *RY1* contacts close, *RY3* is energized from 110-volts to start the motor. *RY1* requires one-milliampere, or less, of current which is obtained by bridging the relay across resistor *R1* (100-ohms or as required). Capacitor *C1* (3000 ufd) is connected across *RY1* and causes a slight delay in its operation. When a *space* signal is received the absence of current releases *RY2* immediately. Capacitor *C1* bleeds its charge through *RY1*, *R1*, and the time constant of *RY1*, *R1*, and *C1*. A delay release time of *RY1* is determined by the time of one-second is enough to keep *RY1* from releasing at signalling speeds up to at least 60 wpm. *R1* is made adjustable to permit setting the optimum delay time. When the absence of the *mark* signal exceeds the *RY1-R1-C1* time constant, *RY1* releases, which causes *RY3* to release and break the power feed connection to the machine motor. Note that the machine will run "open" during the period it takes *C1* to become discharged to the point where *RY1* releases.

In the repeater part of the circuit, *RY2* operates as *RY1* except that there is no delay time. The operating current is one-milliampere or less and is obtained by bridging the relay winding across *R2* (100-ohms or as required). *RY2* follows the d-c output of the terminal unit and its contacts make and break to permit keying of other circuits.

The current drain of the circuits involving *RY1* and *RY2* is two-milliamperes or less and does not subtract from the neutral output of the terminal unit by a noticeable amount. This circuit can be adapted to terminal units having a polar output since the apparatus operates from selector magnet current regardless of how it may be derived.

Of course, *RY3* may be eliminated if a low current operating relay can be obtained with large enough contacts to permit direct switching of the machine motor load.

When this circuit is connected to an afsk type of terminal unit it may be noticed on rare occasions that speech will produce output current of such duration as to cause false starts. This depends largely upon the make-up of the speech signal and the selectivity of the terminal unit with regard to losses at frequencies other than 2125 and 2975 cycles. In other words, you should use a band-pass input filter between your receiver and the terminal unit. Such a filter is easy to build. See the RTTY column in the January 1956 issue for W2JAV's simple unit. If you are too lazy to build such a filter, you can buy one. See the RTTY column in the June 1956 issue.

Dick has promised us a complete set of photos of the elaborate afsk/ssb and fsk set-up at W2ORX. The accompanying snap-shot is just a teaser, as it shows this RTTY station only partially, and in a state of development. We are printing it mainly to point out the unique installation of the Model 26 machine itself. Mounting it *inside* the rack cabinet not only gets it out of the way but also permits the efficient application of sound-absorbing (acoustical) material. This type of installation XYL's are guaranteed to like.

RTTY Handbook

The response from RTTYers, newcomer and old-timer alike, has been extremely enthusiastic since they heard that Wayne and I were putting together an *RTTY* Handbook. For a long time, over a decade, both Wayne and I have received many letters asking if there was such a book available. Now we can say that it is; and it is because of the terrific co-operation

of not only the Cowan Publishing Corporation, but of *RTTY* and *QST* as well. In addition, co-operation of individuals, such as Merrill Swan, W6AEE, Phil Catona, W2JAV, and Bob Weitbrecht, W9TCJ, has not only been complete but it has been speedy as well.

To get *your* copy, send check or money order for $3 to:

RTTY Handbook c/o W2JTP
16 Ridge Dr., High Hills,
Huntington Station, N. Y.

Long-Distance

Since we mentioned the famous transcontinental RTTY traffic net of W1BDI, WØBP, and K6GZ, several fellows have asked for further details. To answer these questions, here is how it is done: Messages are taped on perforated tape and then sent in bunches at 60 words-per-minute by an automatic tape transmitter-distributor. At the mid-point (WØBP) they are re-perforated, automatically most of the time, and then re-transmitted with a TD at the same high rate of speed. This all takes place on 14,345 kc, mostly on Thursday nights. W1BDI and K6GZ put the messages into the national traffic system section nets up and down both coasts.

ZL1WB has been quite active on fsk around 27,000 kc. W9TCJ has been keeping a "more-or-less" daily sked with Bruce late afternoons, Wisconsin time. W6AEE reports a real solid QSO with ZL1WB July 6th, with signals S-7 to S-8. According to Merrill, Bruce is due in Los Angeles about the 9th or 10th of August. He will accompany Merrill to the National RTTY Meeting in Chicago and to visit WØBP and W9TCJ.

ZL1AHO has built fsk into an ARC-5 transmitter and has also built a W2PAT TU. ZL1-AKW should have his converter finished by now, too. Bruce, ZL1WB, and Ron, ZL1AHO, have been negotiating with the Post and Telegraph Department for printing equipment to be made available to New Zealand amateurs through the NZART.

New Zealand radio amateurs now have authority to use fsk on 3700 to 3800 kc, 7100 to 7200 kc, 26,960 to 27,230 kc, and 29,000 to 29,700 kc. On the bands above 29,700 kc afsk is permitted without restriction. Note that on 20-meters only make-and-break RTTY is authorized. (*darn*) At the annual NZART Convention, over by the time this gets down under, it is hoped that the problem of acquisition of fsk allocations on twenty and fifteen will be tackled.

Test Recordings

Since W2VLL and K2IAX have been playing around with a tape recorder and afsk, Dave suggests that, as most hams have good turntables and pickups in their hi-fi, that some ham in the recording business should produce some good 33-1/3 test records of the standard afsk tones, 2125 cycles and 2975 cycles, and also of test transmissions; RY's, brown foxes, etc. Dave believes that the availability of such records, like the present hi-fi test records, would be a tremendous help to the RTTYer in his adjustment of terminal units and the machines themselves.

Amateur Radioteletype Channels

National, FSK 3620, 7140, 27,200, 29,160, 52,600 kc.
National, AFSK 27.2, 147.96, 144.138 mc.

Area Nets:		
California	147.85 Mc.	AFSK on AM
Chicago, Ill.	147.70 Mc.	AFSK on FM
Detroit, Mich.	147.30 Mc.	AFSK on FM
Washington, D.C.	147.96 Mc.	AFSK on AM
	147.495 Mc.	AFSK on AM
New York City	147.96 Mc.	AFSK on AM
Livingston, N.J.	146.30 Mc.	AFSK on AM
Buffalo/Niagara	147.50 Mc.	AFK on AM
Boston, Mass.	147.96 Mc.	AFSK on AM
Seattle, Wash.	147.00 Mc.	AFSK on AM
Spokane, Wash.	147.15 Mc.	AFSK on AM

Novice

Novice interest in RTTY is perking up. Besides KN9EVD, we hear from KN3JQC, KN-4ONW/8, KN5KLA, and KN5IJZ. It was also noticed that KN9CNY is on the RTTY Committee in Chicago. We would like to suggest to *all* newcomers in this very special branch of amateur radio that they get to know the nearest *active* RTTYer. How? Easy. For $1 you can obtain the *RTTY Call Book* from RTTY, Inc., 372 West Warren Way, Arcadia, California. By the way, they also publish *RTTY*, the monthly bulletin of the RTTY Society of Southern California. The subscription is $2.50 per year.

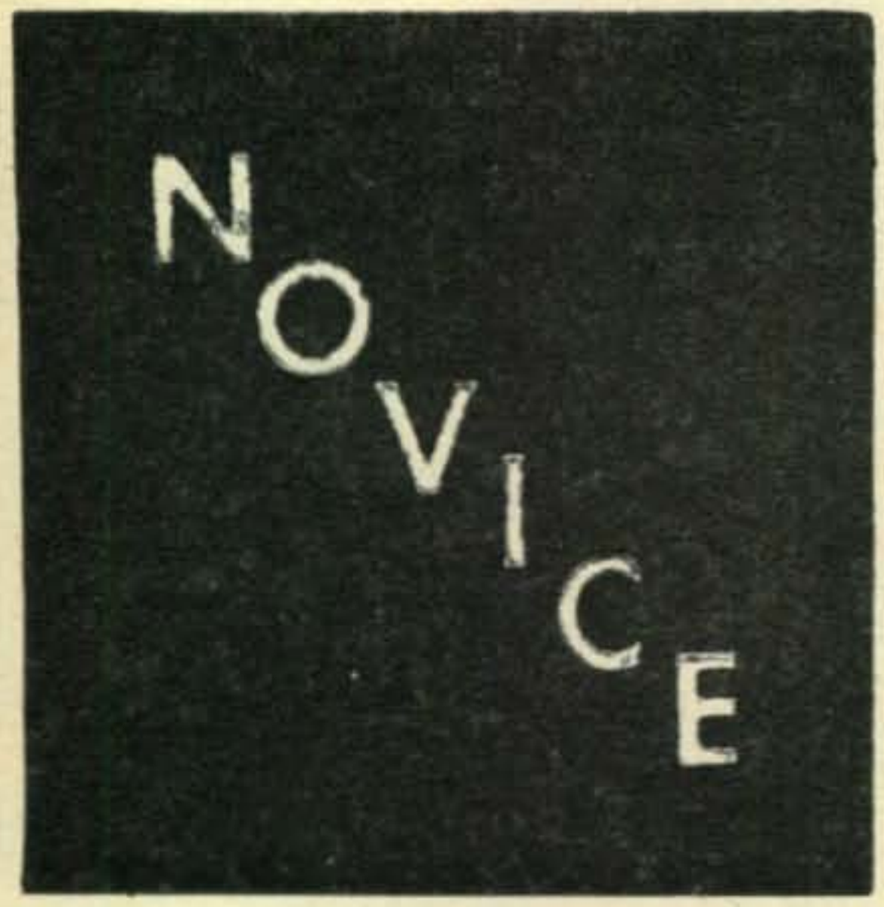
Here and There

W8NIY, in Elkins, West Virginia, has acquired a 10-A printer and a large size headache. It does not garble, but prints repetitive gibberish. Can anybody help Rolfe? W8UEV, in Cincinnati, Ohio, has acquired a Model 26. Al has 400 watts and an NC-300. He also adds that several other "Cinti" hams are awakening.

W6CQK/2 installed the automatic carriage return and line feed feature in his Model 26, per *RTTY* of March 1957. Jack used a *Guardian* Type 14 intermittent-duty solenoid that had a 110-oz pull. W6AEE reports an RTTY meeting of the Northern California Amateur Radioteletype Society during the WESCON show and convention in San Francisco August 21-24th.

Ed Sheets, 117 South 4th, Red Oak, Iowa, has a couple of Model 26's that he would like

[*Continued on page 94*]



Donald L. Stoner, W6TNS
P. O. Box 137
Ontario, California

the Why and How of 15 Meters

Hi everybody. Here we are back again after a grand and glorious vacation. San Francisco, Yosemite, Las Vegas and next stop the poor house.

Our station's heard list contains the calls of many 15 meter Novices. One might think that most of the Novices are on the band. However, percentage wise, there are only a few fellows on 15 meters. Most Novices fail to realize the potential of this, our highest frequency "cw only" band. Did you know that with the right conditions and a good antenna, you can work almost any country in the world *with only one watt of power?* Think that's amazing? Some West Coast hams recently worked Canton Island, almost 5,000 miles away, with two transistors *that were running .025 watts!*

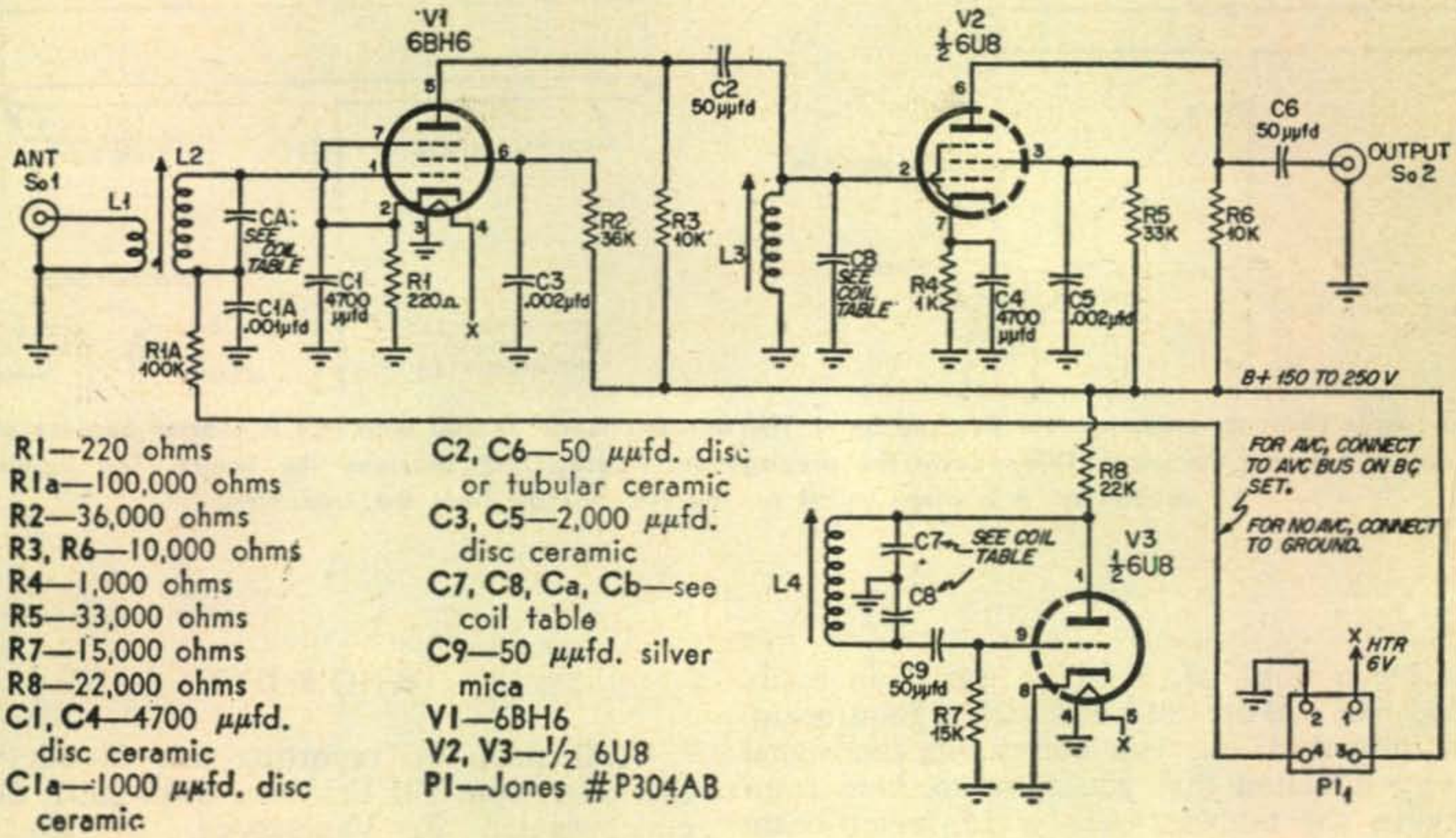
Actually, fellows, we're pretty lucky to have the 15 meter band. We hams were allocated a wide slice of one of the sweetest cw bands that ever was. Readers who scan the letters regularly know that all the juicy dx that is available to Novices can be found on the 15 meter band. The Novices who report choice dx, got it by patience, good gear, and by simply slugging it out right along side the VK's, ZL's, and high power American cw stations.

Occasionally, I receive letters from Novices complaining of the QRM from foreign stations when they are trying to work another Novice across the country. If you think about it a bit, you'll realize that the chances are pretty good that you are QRM'ing the foreign stations just about as bad as they are QRM'ing you! I dare say that there are some of them that wish the 15 meter Novice operators were somewhere else, well removed from the dx portion of the band.

Generally, though, I have found that the dx stations get a kick out of providing Novices with an exotic contact. When a ham trying for DXCC (DX Century Club, work 100 foreign stations) contacts a rare one, he thinks "well, that's one down and 99 to go." But to the Novice who usually works only W and K calls, a dx contact provides a unequalled thrill. And when that QSL card arrives, well Oh Boy! Their eyes sure pop out when you flash that latest card from Tahiti, Malta, or Australia—etc. Just look through the front end of the Call Book, and see all those exotic far away lands—Sikkim, Macao, Eritrea, Corsica, Reunion Island, Liechtenstein, Surinam, Tannu Tuva, Turkoman, Uzbek, Kenya, Afghanistan, Bambia and Niue to name only a few. And you have just as good a chance as the next guy of working these countries. That's the *why* of 15 meters, now, let's take a look at the *how*.

One Novice commented that the 15 meter band was sure good *when it opened up*. At first, I couldn't understand it. At my QTH, I can receive stations on 15 meters from slightly before sunrise, until the wee small hours of the morning. Apparently, this fellow could only hear stations coming through on the days when the 15 meter band *really got hot*. Often, the weather conditions will be just right and the only thing you can hear are "Dog Xray" stations, local stuff (the W's and K's) comes in real weak! If you tune your receiver any time during the day to 15 meters and do not hear anything, or only a few stations, the chances are that there is something wrong at your station or a solar disturbance is in progress.

Probably the main reason your 15 meter reception is lousy is your receiver. 15 meters is getting up toward the high frequency end of common receiver vacuum tubes frequency limits and therefore, the receiver starts to sound a little "sluggish" above 14 megacycles. You might never hear a station on 15 meters if such a receiver was coupled to a poor antenna. If you are planning any operation on 21 mc, take your receiver over to a ham with a receiver known to be performing on 15 meters and compare the two. If your receiver is "gasping for air" at this high frequency there is no need to pitch it in the trash can. The trouble can be cured by simply adding a converter to



R1—220 ohms
R1a—100,000 ohms
R2—36,000 ohms
R3, R6—10,000 ohms
R4—1,000 ohms
R5—33,000 ohms
R7—15,000 ohms
R8—22,000 ohms
C1, C4—4700 µµfd. disc ceramic
C1a—1000 µµfd. disc ceramic

C2, C6—50 µµfd. disc or tubular ceramic
C3, C5—2,000 µµfd. disc ceramic
C7, C8, Ca, Cb—see coil table
C9—50 µµfd. silver mica
V1—6BH6
V2, V3—½ 6U8
P1—Jones #P304AB

Coil data for W2AEF Converter—15 meters
L1—2 turns #20 plastic wound around bottom turns of L2 (wrap scotch tape around L2 first). L2—20 turns #28 en. L3—18 turns #24 en. (L2&3 wound on ⅜" dia. slug tuned ceramic forms—CTC LS5). L4—18 turns #26 en. (wound on ¼" slug tuned ceramic form CTC LS6). Ca. Cb—5 mmfd each. C7, C8—100 mmfd Silver mica each.

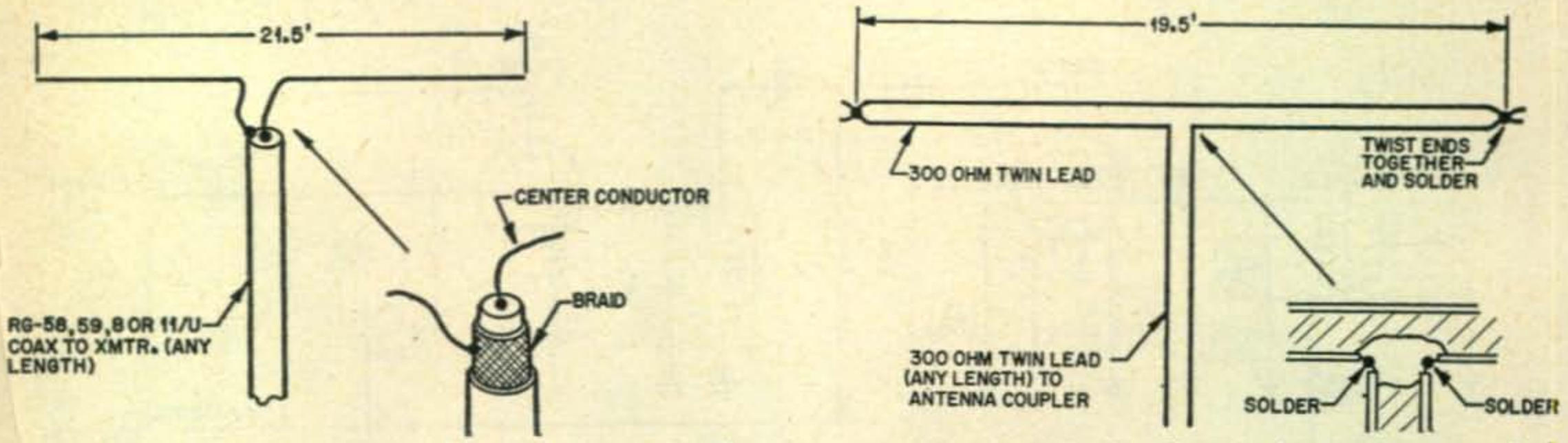
the receiver. The converter uses tubes and circuits specifically designed for high frequency operation. In addition, compact construction and single band operation make it a super efficient device.

The incoming signal is amplified many times in a circuit known as an rf amplifier. This greatly amplified signal is then sent on to a tube known as an oscillator mixer. The sole purpose of this tube is to convert the frequency of the incoming station to a new *and lower* frequency. For this reason the circuit is often called a converter stage. The output of the mixer then feeds your communications receiver with 15 meter stations, but they have been converted to a lower frequency. Since your receiver is much more sensitive at the lower frequencies all the 15 meter stations will be much louder than before. Pretty clever, huh?

An excellent converter for receiving 15 meters has been described in the CQ Mobile Handbook, both the First and Second Editions. The unit, called a "Converterette" was designed by Bill Scherer, W2AEF, and although built specifically for mobile work it works fine business in a home station. When this unit is used with your communications receiver, you can hear 15 meter stations between 550 kc (the low end of the broadcast band) and 4 mc, depending on how you tune the "Converterette." In case you don't have a copy of the CQ Mobile Handbook (shame on you) I have included the schematic, parts list and 15 meter coil data hereabouts.

Another method of souping up your receiver is to add a preselector. This is simply a fancy name for an rf amplifier. This device amplifies the signals before applying them to your receiver, and is connected between the antenna and the receiver input. By amplifying the incoming stations the preselector helps compensate for the poor efficiency of your receiver at high frequencies.

The other big offender when you have poor 15 meter reception is the antenna. Sure, you can load up a long wire, or use your 40 meter doublet but the fellows who snag the dx consistently do it with a dipole cut for 15 meters or even a 15 meter beam. You can make a very simple antenna by cutting a 19.5 foot length of 300 ohm twin lead and shorting the two wires at each end of the line. Next, find the center (9.75 feet in from the end) and cut one of the wires and strip the insulation. To the two wires connect the end of a piece of twin lead, any length, which will connect to your antenna coupler. This type of antenna is called a *folded dipole*. You can make even simpler 15 meter antennas that do not require an antenna coupler. Buy a length of coaxial cable (either 52 or 72 ohm) long enough to reach from the transmitter output to the antenna. Cut two lengths of copper wire, each 10¾ feet long. Connect one of the wires to the coax braid at the antenna end, and connect the other wire to the center conductor. Hang this *doublet* or *dipole* up in the air as high as possible, clear of all obstructions. If you really want to live it up, invest your money in a rotary beam. It will do more for your signal than anything else



Two simple 15 meter antennas that you can build. The antenna made of 200 ohm line is shorter because of the insulation between the wires. This reduces the propagation velocity and shortens the length. The dipole, or doublet as it is often called can be fed directly from the transmitter.

that I can think of. Your 75 watts can easily sound like 300 or 400 watts with a good beam. Not only that, but you can squirt the signal in any direction that you want to. One company in the midwest sells a 15 meter beam for $29.95 and it is a bargain. Of course, you can construct your own beam if you have spare time, and save some money.

The only other source of trouble on 15 meters is TVI. Sometimes this can be pretty nasty especially with the older television receivers. You see several of the amplifying stages in these receivers were tuned to approximately 21.25 mc. If your signal is strong and the shielding in the TV set is poor enough your transmitter will interfere with the picture or be heard in the sound. The interference will be just about as severe on all channels and a low pass filter on your transmitter will not help. However, if you only interfere with a few channels, it is unlikely that you are getting into the i-f amplifiers. This condition is caused by harmonics being radiated by your transmitter and/or a high pass filter on the TV set should clear the interference. Another check for harmonics is to observe a variety of receivers. If you are radiating harmonics, most of the sets in your area will have the same kind of interference on the same channels. If your own set is clean of interference, then the transmitter is probably being picked up in the i-f amplifiers of the offending TV set. Since this is not your fault, you are not responsible for removing the interference from the offending TV set, however, you are obligated as an amateur to do all you can to help clear up the trouble (such as on the air checks for the TV serviceman, etc.). It is *not* a good idea to do any of the repair work, unless specifically requested. It sometimes turns out to be a very nasty job to shield the offending stages. In any event, do not let TVI keep you off the air. Even the most stubborn cases can be cleared up. So that's the 15 meter band fellows, I hope this information will help to get you on the air. Maybe I'll work you one of these days.

WHO'S DX?

We'll start the reporting this month with the letter from Ulf Ericsson, SM6-2801, Sandelhielmsgatan 3, Vanersborg, Sweden. He writes: Dear Don, Here comes a new report about the Novices heard here in Sweden. 3.5 mc. nil, only utilities and QRM. 7 mc: May 25—KN1AYL, BQC, KN2ZNP, ZEB, ZXC, WN2DKL, KN4KIP, MJM, KN8EIK. June 2—KN1AUS, AWQ, WN1MHR, MMW, KN2ZDA, YYH, YMO, WN3IGG, IEU, KN4OCZ, OEW, PFL, MLV, KN8GAO. On 21 mc. May 14 WN1NKV, May 16—WN1NYX, KN2UOG, ZUX, May 18—KN2YZD, KN9EXE. May 27—KN1BDJ, KN2ZVB, ZMY, WN3BYC, KN5JEH. June 1—KN2YJK, KN8CVQ. June 2—KN1AQI, BTT, WN1OIH, OPB, KN2YGY, ZNT, UTC, YXT, ULU, VZE, VIT, WN3JEE, IGK, HIT, KN5JRK, KN8BZR, KN9EUQ, WP4APV. June 9—KN4LEA, KIC, KN8EGD, KN9GKZ. June 11—KN3AAG, KN4OUX, MGP, JZR, JYQ, KN8DSL, KNØITF. The best time to hear Novices on 7 mc. is between 0100 and 0300 GMT. Before 0100 there is too much BC-QRM. At about 0300 the BC stations return after a two hour pause. I received a QSL from KN8DPD and WN3JMG, tnx om's. These QSL's are something to show one's friends, hi. (Just think how the Novices that receive your SWL card feel, Ulf!) I hope to confirm these reports through the Novice column. So 73's for now Ulf, SM1-2801." ATTENTION TECHNICIANS—The SM hams now have permission to work 50.0 to 50.5 mc with a maximum of 150 watts input. I know that news will be happily received by the Technicians, particularly those on the East Coast.

Rundy, W3ZA/XV sends his monthly list from Saigon for June. "It's not very impressive as conditions here have been pretty poor most of the time. Maybe things will pick up in July. (It's pretty impressive to the fellows on the list, Rundy! Hi). I am looking forward to getting on the air from out here soon, I guess

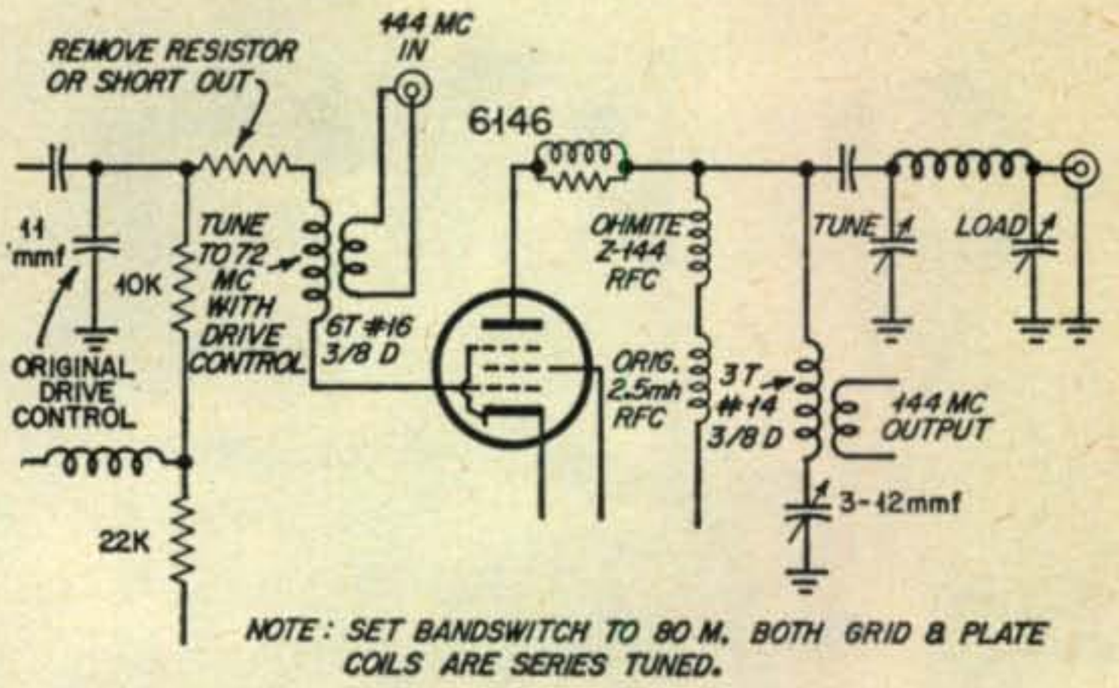
everybody will be looking for me! June 8, 1800 GMT-KN5JSZ, KN6SXM, TQK, UTW, UUG, VNM, VYQ, ZDT, WN7HQP. June 9, 1500 GMT-KN4LEX, KN6RUR, UMV, YDF, YTA, WN7FGW. June 10, 1575—WN3LAX, KN4JYQ, KN6TLU, ZCW, WN7EOQ, KNØRJW. June 17, 1600 GMT-KN6TFU, YKW, ZFU, ZHJ, ZRK. June 23, 1540 GMT-KN6UTW, UVC, YLK, ZHU, ZJV. 73's Rundy. QTH L. M. Rundlett, MSUG, Box 34, Navy 150, c/o FPO, San Francisco, California." Many thanks Rundy, I'll be looking for you on 15 meters when you get the green light for operation in Saigon, Viet Nam.

I cannot express my thanks to the fellows that send in these periodic list of stations heard. The Novices who have their call listed are just as "proud as punch." Any lists of stations heard outside the States will be greatfully received by the Novices and myself. Here is an example of what I mean. I received this from Forrest D. Castle. Hq. Btry 22d AAA Bn, APO 331, San Francisco. He writes: "Dear OM, Wonder if you would pass the word around to the Novices that I am hearing them quite frequently on 40 meters. So far I have only worked KN6ZGL though, because the upper limit of the 40 meter band for us is 7150 kcs. Those Novices working in the early morning hours calling CQ or CQ DX might do well to listen from about 7145 on up, instead of just on their frequency, even though they may be operating near 7200. I have heard the following on 40 meters and tried raising them, but no use. WH6CBX- 7162 kc, KN5JWK- 7152 kc, WH6CEA- 7173 kc, WN7FSA- 7175 kc. Others have been heard but I did not log them or try to raise them unless they were near the low edge. I will be glad to contact anyone I can. I am on every night from about 0100 to 0600 PDST and always listen part of that period for Novices. I QSL 100% on all first contacts. 73 Cas, KR6AK Okinawa." Well, you heard what the man said fellows. Better tune down past the low end of the band. Actually, this is always a good idea. I remember when I was a Novice, several General Class hams called me just outside the low end of the band (at that time it was 7175) to avoid QRM from other Novice stations.

Miscellaneous Stuff

An SWL, Morris Heins, 443 Grandview, Memphis 11, Tennessee advises the readers that they can obtain the FL18 filters for the Octopus (Novice column June 57, CQ) from M. D. Haines, W5QCB, 1316 S. W. Military Drive, San Antonio 21, Texas at a cost of 2 for $2.00. That's a very good price when you consider how much it will improve your reception of cw.

Every time I say that you can't do something, someone shows me how to do it. John



NOTE: SET BANDSWITCH TO 80 M. BOTH GRID & PLATE COILS ARE SERIES TUNED.

Modifications to the DX-35 for use as a two meter amplifier. These changes were suggested by K2SKB. For more information, write John Booker, RD#1, Brooktondale, N. Y.

Booker, K2SKB, RD#1, Brooktondale, N. Y. sends this along. *Dear Don: Hummmmm, I noticed you said there wasn't any article in CQ on converting the Globe Scout to 6 meters. You're dead wrong! It was in the Nov. 56 issue. Didn't you read that issue?* (I goofed). *Now, a note on the DX-35. It is possible to put it on 2 but I don't know how efficient the final will be. In a similar rig here, I got about 20w out on cw. I am including the conversion circuit. 73 John.*

Another very interesting letter was received from Al Martin Brogdon, Radio Station WHUB, 326 S. Walnut Avenue, Cookeville, Tennessee. Al writes regarding an inquiry about converting the Johnson Adventurer to 6 meters, by Richard L. King, W9MWF. (July CQ). Al says *"My article on the conversion of the Adventurer to 6 meters should appear in CQ in a couple of months. I had to add a resistor to get higher 6AG7 screen voltage and a ceramic xtal socket for 300 ohm output. I used the 'min-max' switch as the six meter band-switch. I can work 75-100 miles ground wave with a 4 element beam 15 foot high. States total has reached 17."*

Instruction and preparation for the General and Technician Class license. A theory course will begin October 1 at the Evening Community Center in Jamaica L.I. Apply to Saul Schacket, W2HNG, 13530 232 St., Springfield Gardens 13, Long Island, N. Y.

Several readers have inquired where they can obtain the non-inductive resistors for use with the T2FD antenna. The resistor specified is a standard non-inductive wire wound resistor manufactured by Sprague Electric, North Adams, Mass. The resistor should be available (or can be ordered) from any supply house handling the Sprague line.

Help Wanted

William B. Beam, Rt. 2, Box 15R, Bishop, California, Phone 352 would like to learn about becoming a radio amateur. He needs

Bruce W. Eldridge, KN1CIW, 119 Main St., Shelborne Falls, Mass worked 14 states four days after receiving his ticket. He did it with a DX-20 and a HQ-100. The antenna is a long wire end fed on 80 meters and a folded dipole on 40. Look for him on 15 as soon as he gets his 3 element beam.

help with the code and theory.

Jas. H. Roberts, 1334 W. 12th St., Hastings, Nebr. wonders if there is a local ham club. He wants to become a ham and needs help with the code and theory.

Thomas Nichols, 98 Warren St., NE, Atlanta 17 Ga., needs help with the code and would like advice on starting a Novice station.

Letters to the Editor

Bob, KN5JTN, 509 Dakota, Norman, Oklahoma writes:

Dear Don, I have not seen many letters from Oklahoma, so here's one. The rig here is a Harvery Wells TBS-50D and the receiver is an NC-98 and QF-1. I've worked 20 states and will sked anyone wanting Oklahoma. I really like the Novice Shack. 73's Bob.

A. Z. Cline, KN4KZM, 51650 Ledbetter, Anniston, Alabama would like more information on the T2FD. He wonders:

Can it be used horizontal with good results and what kind of spreaders do you use in the end of the T2FD where the three egg insulators are. Where can I find the type of relay to build the Octopus and can it be used with 200 ohm line. *First of all, om, the T2FD is non-directional because of the angle it is mounted at. If you mount it horizontally, it will be bi-directional. No spreader was used at the end, the eggs were arranged to keep the two wires apart. Try it, it works. The relay is a standard Advance Company relay and since most suppliers handle this line, you should have no trouble locating it. It can be used with 300 ohm line, if you purchase a 4 pole, double throw relay and use the extra contact to switch the extra antenna lead. 73's Don*

Edward McCann, KN1CJO, Box 184 Eliot, Maine sends the following.

Dear Don: By the time you get this letter, I will be on the air with a DX-35, an ARC-5 (BC-454 plus converters) and an all Novice band antenna. I got my license June 27 and have been waiting for the Heathkit. Since Maine is a "rare state," it will be glad to make any skeds with anyone and will answer all mail. 73's de KN1CJO

Here's a man with a problem. Freddie Gilmore, KN5JRI, Box 804, Agua Dulce, Texas says:

Dear Don, I have had my ticket for about 5 months now and have not been on the air as I have no antenna. If any of the readers have any ideas sure wish they would let me know. My equipment is a Lettine 50 watt xmitter and a Hallicrafters S-22R. I'm a Junior in High School, 16 years old and the only ham in town (pop. 730). Very 73, Buddy. *Gee Buddy with all that room in Texas, why don't you put up a rhombic?*

Here's a letter from a "dx wheel" with an unusual antenna system. Wally Pugh, KN2-

Don Wilbur, Jr., WN2MGW, 754 Myrtle Ave., Albany, New York likes to see pictures in the Novice column so he sent his in. His rig is an S-53A and a Heath DX-35. Don uses the famous T2FD antenna.

UWY, 2 McGibbon Avenue, Amsterdam, New York.

Dear Don: I am 12 years old and in the 6th grade in school. I have 15 countries on 15 meters, VE1, 2 and 3, W and K, G2, 3, 4, 5, and 8, DL1, 2, 3, 4, 6, 7, 9, DM1, DJ1, GM2, 3, and 4, GI3, LA3, 9, EA2, 5, PAØ, HA5, OH2, 7, ON4, KP4, HH2 and last but not least, CO2X. I am getting pretty fair reports with a window screen fed with coax and the tin roof over our back porch. As for WAS— 33 states. The rig here is an Adventurer and an HQ-129X. Well, Don guess it's QRU here. 73's Wally.

An almost General, Richard Hazelton, WN-7FSH, RR4, Idaho Falls, Idaho writes:

Dear Don, The rig here is an HQ-129X and a TBS-50D. My antenna on 15 meters is a homebrew 3 element beam. I have taken the conditional exam and am now patiently waiting for the ticket. As a Novice I worked 46 states, I only need Nevada and Vermont and I will answer letters for skeds from these states. Also, I worked into WH6, WL7, VE3 and 4 land. I am on 15 meters in the evenings at 21102 and 21162. Best of 73's for now, Dick.

Howard Perkins, KN8EUX, 19153 Genesee Rd., Euclid, Ohio used to be just an SWL. His letter reads:

Dean Don, I just received my ticket with the call KN-8EUX. My rig is a Viking Adventurer running 50 watts input to a folded dipole 56 foot long and 40 feet high.

The receiver is an SX-28, 1941 vintage and I also have an S38, 1953 model. I am 37 years old, married es have been an SWL since 1938. I finally decided to get a call and believe me it beats just plain listening. I have had 78 QSO's in 16 states so far. My best DX so far was K6SCH in Susanville, Calif. Very best regards, Howard.

Mike Broga, KN6TBA/5, 107 East Fifth St., Long Beach, Mississippi is another 15 meter "dx'er." Get a load of this.

Dear Don: I have just passed my Technician and I am going to convert my AT-1 to six meters. Since I have been operation portable, I have confirmed 27 states plus EW3BJZ, HH2OX, KP4AFC, KZ5LB, OA4AU, ZE6-JX and VE's. I will be glad to sked with anyone needing Mississippi for WAS. I operate every afternoon on 15 meters. The rig now is an AT-1 running about 35 watts to a 15 meter Quad and the receiver is an RCA AR-88A. My dad has passed his conditional and his new rig will be a pair of 813's. 73's Mike.

Curt, KN2ZJW, 302 So. Union Ave., Crawford, N. J. uses a different salutation, and one I'm sure many of us are familiar with. He says:

Greetings, I was an operator during WWII es finally got my license 12 years later—hi. Have been a faithful reader of the Novice column since I first picked up a CQ Mag. I have 12 states es Canada worked in 2 months. Keep up the fine column. I'm sure it is helping others as much as it is me. Vy 73, Curt.

Congratulations to Pete Roussel, KN5JCC, 6515 Brompton, Houston 5, Texas.

Dear Don: My days as a Novice are numbered as I passed my General this morning. My final Novice summary looks something like this: 43 states, 10 countries and 4 continents—hi. I am still a Novice at heart though

How would you like to have this come sailing toward you just when the UA's were coming in on 15 meters? Mike Swing, KEHWY, 4627 Cedar Springs Dallas 19, Texas sent this photo in to show you fellows what the Dallas twister looked like right up close. In fairer weather, Mike runs a Globe Scout transmitter and uses an NC-173 for receiving.

and will still spend much of my time on the Novice bands. So if anyone needs a sked for any reason, I will be happy to arrange one. Hope to work you sometime es gud DX. Vy 73, Pete.

James A. Hamm, KN5KRK, 206 Agee Avenue NW, Camden, Ark. should be on the air by now.

Dean Don: I just got my ticket the 17th of this month but can't go on the air because I have no receiver. I plan to get an HQ14OX and I have a Heath Q Multiplier to go with it. The transmitter is a Heath DX-20 and for an antenna I have a center fed half wave dipole. At first I plan to go on 40 meters with a crystal of 7183 kc, then I will go to 15 meters after I get started. The Ham I credit most for helping me get started was Gene, W5TIB, also, Willard, W5ENP has helped a great deal. Vy 73 Don, James.

Boy! Would I like to have worked this one. Clark J. Ballard Jr. KN8CPL, 8806 Plainfield Rd., Cincinnati 36, Ohio snagged some dx.

Dear Don: I want to report a rare one for 80 meter cw. On 6-20-57 I hooked up with UA2DM (Moscow, USSR) at 0128 EST. My RST was 589, his was 579. The rig here is a DX-20 and an S-53A receiver. The antenna is an 80 meter dipole 45 feet high. My WAS is 40 confirmed and 41 worked. Gud DX, Clark.

Louisiana checks in, in the person of Dan Babin, KN5KQG, P. O. Box 6 Houma, La. He writes:

Dear Don, Certainly enjoy reading your Novice articles. I find the letters most interesting, however, I haven't seen one from Louisiana in sometime. The rig here is a DX-25 and an AR-3 with "Q" Multiplier for a hearing aid. My ticket is one week old and have worked 10 states in 50 contacts. When I start pounding that brass, I can't seem to stop—hi. My freq. 7153, 7175, and 7190. Would like skeds with Ark, Tenn., and Okla. I QSL 100%. 73's Dan.

The "Lone Star State" puts in another appearance via Donn Caldwell, KN5IHD, 4924 Glade Street, Fort Worth 14, Texas.

Dean Don: I have been a Novice for about eight months, and I enjoy ur column very much. I wish it was nearer the back of the magazine though, because I follow Wayne Green's example and read CQ from the back. The rig here is a WRL Globe Trotter, a Hallicrafters S185 and a Heath antenna coupler. The antennas are 40 and 15 meter doublets. Sorry, no dx to report for this "lid" and his peanut whistle. My WAS is 6 states. I would like a sked with a KNØ in Kansas. 73's Donn.

Right directly behind that big grin sets Hamp Willford, KN5JCT, 1303 Myrtle, Greenwood, Miss. He works 40 and 15 with a DX-20 and receives with an S-41G. He has worked 37 states, Peru and Puerto Rico in 4 months of operation. He will sked anyone needing Miss. for WAS. Montana stations especially should look for him.

Tex Birnholz, KN2VAB, Box 217, Budd Lake, N. J. is a real old man. He writes:

Howdy Don, Right now I'm up here working my AT-1 and SX-28 at a portable location. Three days ago, I received my Technician ticket but I really am after the General license. The confirmed states mark is up to 25, so I'm half way through. As for me, I am an old man of 10 years. So far, in over 8 months I haven't worked a ham younger than me. I think the youngest has been 13 years of age. For any hams in the area, the phone is Netcong 2-1146R. 73, Tex.

Frank S. Dombek, KN8EHS, 1965 S. Arlington St., Akron 6, Ohio has a problem like this:

Dear Don, Could you please find the time to help a lowly Novice who is interested in two meters? (*what's this lowly business?*) In the Dec. 56 issue of CQ, page 51, you described a 2 meter transmitter to be used with the globe Scout Transmitter. Would the 2 meter rig require any modifications to be used in conjunction with my DX-35? Where would I get my modulated B plus from my transmitter? Please explain. Hopefully yours, Frank. *Well, I would not recommend using that two meter rig with your DX-35. You see, the Globe Scout has high level modulation and the DX-35 uses a form of clamp tube modulation. The two meter transmitter would have to be reworked to utilize clamp tube modulation. It will work, but you will probably have to do a lot of fidäling with it.*

R. P. Southern, 813 Mulberry Avenue N. W., Ardmore, Oklahoma is a short wave listener with a problem. He emits with:

Dear Don, I am an almost Novice. My receiver is an S-38 and I have a problem with same. I don't get enough volume when on c.w. and I don't need a hearing aid— hi. I hope to be able to take my Novice test in August. I am 15 years old and in the 10th grade. You have a fine column, keep up the gud work. *Thank you, Richard. It's pretty hard to diagnose the facts and repair your set from this far away. A properly working S-38 doesn't suffer from inadequate volume, so it looks like you have a repair problem on your hands. Possibly one of the local radio shops can spot the trouble.*

Here's a chance to correspond with some dx. Diego Garces Soto, HK5SG Farmacia "Imperial," Calle Sarmiento No. 22A-15, Tulua, Valle, Colombia, S. A. writes the following.

Dear Mr. Stoner: I'm a Second Class Radio Amateur here in Colombia; my rig is an AT-1 modulated by 2-UL6's in pp, with a VF-1 VFO. At this moment I'm not operating my station because I have no receiver. They are too expensive here (I mean a good one). Someday, I intend to go to the USA to live. I would like to find friends there. I would be delighted to have pen pals. Thank you es 73, D. Garces S.

Phil Goetz, K9ELT, 4017 Mandan Crescent, Madison 5, Wis. finally made it over the "hurdle." He sends along the following word.

Dear Don, I passed my general almost 9 weeks ago and decided I'd better write before it got here. I have had over 530 QSO's in 42 states and 8 countries. DX includes G's, DL. SM. OK. HB, VP7, es VE's. I worked it all with an AT11 running 24 watts to a 40 meter doublet. The receiver is an 8-40A. My age is 14 and I finally got my dad interested in ham radio. He is waiting for his Novice now. 73's Phil.

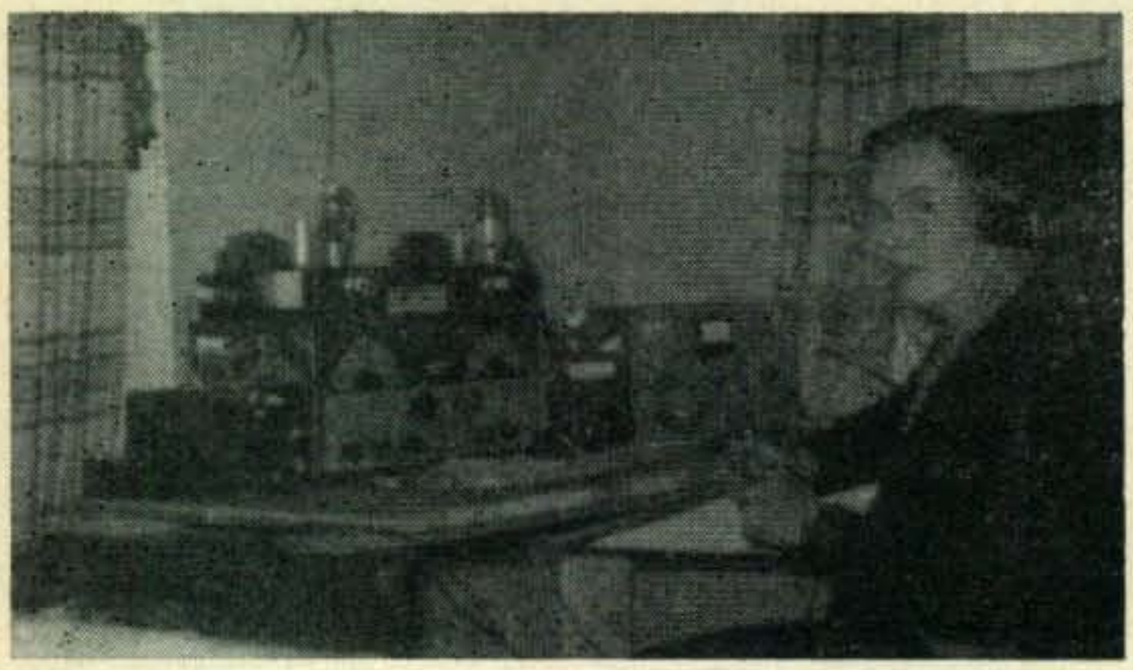
Mike Samarco, W1JFL, 51 Dearborn St., West Newton 65, Mass., sends along the news of his 15 meter triumphs.

Dear Don: Boy is 15 meters a real hot band! On June 28, I heard and worked some of these stations in the Novice band; OA4, F3 and 8, DL1-3-7-9, GM3, CN8, HP1, ON4, CN2, I2 and WP4. These stations were quite active. I am running an SX-28 and a home brew transmitter running 60 watts. I have my WAS and will sked anyone for WAS. I will help anyone around this area get their ticket. Keep those reports of Timas' coming in. 73's Mike. *I don't know what happened to Tima this month, Mike. Haven't heard a word out of him.*

Well, that's about it for this month fellows and gals. Keep those letters and photos coming in. See you all next month.

73 Don, W6TNS

Looks like Larry Taylor, K4JWL 320 West Taylor Street Griffin Georgia just picked off another dx contact. He uses an S-85 and a QF-1 for receiving, and a Knight job for a transmitter. He has worked KP4, WH6, PY1 and 3 VE's. Larry would like skeds with Nevada, Wyoming, and South Dakota to complete his WAS. QSL's 100% natch!



Alan Armstrong, 1120 S.W. 139th Apt. 202, Seattle 66, Washington operates novice station WN7-JBG. His rigs include a Heath AT-1, ARC-5 transmitter, a BC-455 and a Heath AR-2 with a Q Multiplier. He has worked 17 stations in 4 states in a little over 2 weeks.

YL

Louisa B. Sando, W5RZJ
212 Sombrio Drive
Santa Fe, New Mexico

Here is a YL who should be an inspiration to most of us. K5BEU, Ethel Wymola, of Brenham, Texas, running only 60 watts on 20 phone has really been setting a record. Within a year and five months after receiving her license she achieved DXCC, and made WAC/YL a year and three months after getting on the air. In her first six months she made WAS, then Worked All Central America and WBE (Worked British Empire). In addition to all this Ethel is a working gal.

It was in "Cindy's Chatter" (W5ZPD) in *HARC News* that we first learned of K5BEU. With all Ethel's DX, it seems she had yet to work another YL in Texas! Unlike many of us, Ethel started out as an SWL, spending many hours listening to the 75-phone band on her b.c. receiver. Later she got an HQ-129X and discovered there were other Ham bands. The DX bug really bit her then so she bought an NC-183 receiver, 80-ft. steel crank-up tower, rotator and 20-meter miniature beam. Still she was only listening. Finally she couldn't stand not being able to talk back, so she went all out for her General class, got a Viking Ranger and mike and was in business when her ticket came in June '55. Obviously, all that previous listening paid off when K5BEU started "talking back" to the DX.

7th Midwest YL Convention

The 7th annual Midwest YL Convention held May 24-26 at the Autorama Motel in Flint, Mich. brought together YLs from Michigan, Colorado, Pennsylvania, Wisconsin, Illinois, Ohio and Canada. A special prize was given to KØBTV, Kay, from Boulder, Colo. for being the YL who had come the longest distance. Convention Chairman, W8ATB, Esther, was assisted by Wanda Bickersteth; KN-8CQH, Helen; W8KLZ, Betty, and W8UAP, Marion. They kept the YLs busy with a tour, buffet supper, QRM party, luncheons, talk on Civil Defense, a business session, prizes, buffet dinner and entertainment. In conjunction with the convention the YLs had an FB write-up in *The Flint Journal*. W8RIR, Beth, reports that next year's (8th) Midwest YL Convention is to be held in Toledo, Ohio.

Oklahoma State Convention

Eleven YLs met at the Oklahoma State Convention held June 1-2 on the campus of Northeastern State College in Tahlequah. A SWOOP initiation was part of the ladies' program, planned with KN5JFJ, K5IXR, K5GZF and XYLs of K5ENM, W5ZBI and W5WI as hostesses. Chairman of the YLRL Roundtable was K5BNQ.

With the Clubs

Welcome to another new YL club! The first statewide organization of licensed YLs in Florida was formed at the Orlando, Fla. Hamfest on April 28, 1957 with the name "Floridora YLs." Of the 30 charter members, 22 were present at the organizing meeting.

An election of officers was held and the following were installed by Anita, W4JCR: President, W4BIL, Fran; vice president, W4-BWR, Ruth; secy.-treas., W4GXZ, Blanche. These committee chairmen were then appointed: Historian, W4HRC, Little Bo; constitution, W4JCR, Anita; certificate custodian, W4WPD, Shirley; publicity, W4UF, Dot; membership, the entire group of SPARC-YLS (St. Petersburg Amateur Radio Club, YLs) with its president, W4BAV, Catherine, in charge.

The Floridora YLs meet every Monday at 0900 EST on 7230 kc. The Net Control is W4BWR, Ruth. However, managership, under

The first three YLs to arrive at Flint, Mich, for the 7th annual Midwest YL Convention May 24-26, 1957 and their hostess. L. to r., standing, W9AYX, Jackie; W9YWH, Evelyn, and W9RUJ, Mary. Seated at her rig is W8ATB, Esther, general chairman of the convention.

Ruth's direction, will rotate among all the members, a month at a time. Any girls are welcome to check into the net.

On June 15 the RIYL club held its second annual luncheon at the Holland House in Warwick, R.I. The luncheon committee, W1s GSD and ZOK, presented a necklace to W1VXC, June, on behalf of the club, in honor of her founding of the club two years ago. Present for the luncheon were W1s CEW, CFT, GSD, JDH, JHY, JJU, VXC, WED, ZOK, WN1OTI, KN1AAK, ex-WN1JJH and three interested girls.

WRONE, the Women Radio Operators of New England, held its annual spring luncheon on June 8 at Shrewsbury, Mass., with W1RLQ, Chata, chairman of the affair. Thirty-five YLs and ex-YLs enjoyed the smorgasboard luncheon. Guest of honor was ex-PAØULA, Paula, from Amsterdam, whose QTH now is Brookline, Mass.

New officers for LARK, Ladies Amateur Radio Club of Chicago, who take up their responsibilities in September, are as follows: President, W9YWH, Evelyn; vice president, W9TDC, Blanche; secretary, K9EMS, Evelyn; treasurer, W9KFC, Ruby; publicity chairman, K9EMP, Marge; Novice representative, W9SJR, Bernice; *Pinfeather* editor, W9UON, Connie.

The Los Angeles YLRC held its June meeting at the QTH of W6UHA, Maxine. Assisted by K6BUS, Midge, and W6AKE, Lorraine, she served luncheon to the group. W6LBO, Mary, conducted installation ceremonies for these new officers of the club: President, W6DXI, Gladys; vice president, W6JZA, Elsa; recording secretary, K6ANG, Lillie; corresponding secretary, K6ACF, Rosemary; treasurer, K6OQD, Jean.

WHO, Women Ham Operators of Tarrant County, Texas, which was organized in Feb. 1957 with 19 members, has now grown to 30 members. The club meets the first Friday of each month, alternately at 10 a.m. and 7:30 p.m. at the American Legion Hall in Ft. Worth. The club had donated to it a tape machine and a dozen each keys and headphones. So far they have helped two Novices and one Technician obtain licenses and they are continuing with code and theory classes. Officers are: President, K5EGB, Jan; vice president, K5CRH, Marie; sec'y.-treas., W5GXG, Maudine.

Here and There

Congratulations to W9LOY, Cris, chairman of YLRL's 2nd International Convention, on the arrival of a new baby boy, Daniel, on May 21. . . . Congrats to W6AET, Florence, who won the Santa Barbara Advertising Club's "Hat's Off" award in May for outstanding community service. Flo's special interest has been conducting code classes for the Boy Scouts.

Congrats also to K5DPO, Agnes Crosthwait, 21, of Mosquero, N. Mex. who has been awarded a Fulbright scholarship to study chemistry at the University of Bonn, Germany, during the coming year. Agnes graduated with honors in chemistry from Eastern New Mexico Univ. in June and during the summer has been working as a research assistant in the scientific laboratories at Los Alamos. During her senior year at ENMU Agnes operated K5DPO from her dorm room and was a member of MARS.

K2IWO, Hilda, is off to Japan with her family. New QTH: Office of Staff Chaplain, HDQ, 5th AF, c/o APO 925, San Francisco, Calif. . . . W3OQF, Barbie, and family have moved from D.C. to Cedar Rapids, Iowa, where W3MAX, Dick, is now an engineer with Collins Radio. . . . W3PVH, Betty, YLRL's president, has appointed W3CDQ, Liz Zandonini, to succeed Barbie as YLRL's third D/C for the remainder of this year.

K5ADQ, Nikki, top YL cw scorer in this year's YL-OM contest is about to have competition. WØHQH, Carol, who made top YL cw score in the Ø district in the same contest, has moved to Los Alamos with her OM WØBUR-KØBYY.

KØHTD, Joan, made headlines in the St. Louis newspapers when she took a transceiver along to the hospital when expecting her jr. op. Joan kept in touch with OM George until

These YLs enjoyed the Oklahoma State Convention, June 1-2, 1957 at Tahlequah. L. to r., front row: W5ILO, W5IOZ, KN5JFJ, K9EMP, K5BNQ. Back row: K5GZF, KN5DOT, K5BVW, K5DFB, K5IXR, K5DVE.

W7LIZ, Edith, at her Tucson station which she operates during the school year to keep daily schedules with her OM, W7TCQ, at their ranch near Willcox, Ariz. W7LIZ runs about 100 watts to a pair of 1625s with an RME receiver. For stand-by she uses a TBS and several SCR-274Ns.

K5BEU, Ethel, with some of the many awards she earned in less than a year and a half after getting on the air.

an hour before the arrival of Patricia Diane on Sunday evening June 16, and the next a.m. was back on for a first-hand account. She also checked into a YL net, and KØBSR, Jackie, who sent us clippings, says the 6-meter gals are really proud of Joan.

From W5ZPD, Cindy, we hear that W5DRI, Denna, was the first YL to work Ghana—4 minutes after it gained its independence. Her OM, W5DQK, had the first contact with Ghana.

W4RLG, Frances, made BPL in Feb. and April—we understand the first YL in Alabama to make BPL. She also is an assistant director of the Southeastern Division.

KØBTV, Kay, had an FB write-up in *The Christian Science Monitor* this spring. . . . The Colorado YLs are now meeting for the Loaded Clothes Line YL Net on Mondays at 10 a.m. MST, 7235 kc. with WØTYB as NCS. YLs in other states are invited to check in.

From K1ADY, Mary, we learn that W1NVF, Irene Parlee, of Searsport, Me. became a Silent Key on June 29. Our condolences to her OM, W1FCS. . . . K1ADY and her OM, W1EXD, each have their own mobile rigs on 10 and 75 as well as sharing the home station, at Brewer Lake, Maine, on all bands, phone and cw.

Young YLs

Response to the feature on the Young YLs has been rapid and rewarding. Here's one letter:

"After showing the pictures of those W7 YLs to friends who insisted that Ham radio was the most un-un-unexciting hobby in the world, I received such statements as:

'How can I get a license?'

'Who me? I never said radio was uninteresting.'

"How long does it take to learn Morse code?"

So keep up the good work and the next thing you know the 175,000,000 population will be calling 'CQ YL' — hi!

73, Dave, K2VTX"

Tnx, OM!

QRU?

Do any of you have group photographs of YLs taken at conventions or hamfests you'd like to have appear in the forthcoming YL book? *They should be photos that have not heretofore been published in CQ or QST,* and be clear sharp prints, preferably on glossy paper. They can be of any date and should have identification. We'll be glad to return the photos after reproducing them for the book. Mail them to your column editor as soon as possible, being sure to use cardboard to protect them from bending. One chapter of the book will be convention and hamfest pictures —the more we can have the better. Tnx!

33, Louisa, W5RZJ

This sure beats Ham Radio, eh Honey??

VHF

Sam Harris, W1FZJ
P. O. Box 2502, Medfield, Mass.

"CQ" VHF Contest winner for 144 mc in New York is James Linebarger (K2JLR). The station consists of 120 watts on two meters, 12 element horizontal beam, receiver is an NC300-crystal converter. Forty-five watts on six meters. Very active in all VHF contests, Jim has won four certificates for New York State, ARRL contests. Won two certificates in "CQ" VHF contests.

Two Meters

I am sure that everyone has heard the big news by now, but just as a matter of record the following letter from Vic (W7QDJ) who heard the tape recording made by John:

"The 'impossible' path just took a little longer to break down. For eight months John Chambers, W6NLZ, Palos Verdes Estates; and KH6UK on Oahu, 2542 miles apart approximately, had kept nightly schedules on 2 meters. On July 8, at 2133 MST, KH6UK's high speed tape was heard RST 339. His signal faded back into the noise. Frantically John called back on 14 mc; after the automatic tape was shut off, that he heard the signal. Operation shifted to 144 mc, as signals again were heard. Lightning fast cw reports, r's and sk's were exchanged; but except for occasional two minute fades into the noise, the signal was still there. John called W6MMU, but his antenna was down. John's XYL next worked Tommy with slower cw. The signal was still coming in at 2300 when W6NLZ turned off the rig, it had peaked 579. John's signal was 569. The tape is quite amazing, when you think that this is two meters, one fifth the way to the other side of the world."

"The rig at W6NLZ is a pair of 4x250B's, running 1 kw to a Gonset big Bertha, twenty feet up from his 910 foot high QTH. The receiver is a 417A converter to a 75A3 with 500 cycle mechanical filter. At KH6UK, 600 watts is run to an array of eight Big Berthas. The inversion level was 1500 feet over Los Angeles, 5500 feet at 145°W and 8000 feet over Hawaii, but the important thing is 'this is common for this time of the year, the inversion wasn't even very sharply defined', say airplane reports from Los Angeles to Honolulu flight, 'nothing unusual.'"

In case you think that was the only activity on two, read what the silent man (W8KAY) has to say about the activity during the same period.

Sunday—June 30: "Big aurora session from around 1400 to 1930 EST. 19 states heard. 5 other states reported heard or worked by others on coast or midwest that I know of, making at least 24 states that were represented on this one session. 9AAG worked 5DFU via aurora during this period. First time 5DFU had ever heard aurora at his QTH in Tulsa. 9KLR worked 4LNG Atlanta around 1700 EST. 4GIS Atlanta was also on. Neither Georgia station was heard at W8KAY. 4LNG was hearing 8KAY, and was heard by 2CXY and other east coast and midwest stations. 4ZXI North Carolina had field day working them right and left since many of the gang needed that state. Among approximately 100 stations heard at 8KAY: ØLFE and ØBKV in Mo., ØSMJ and KØEMQ in Iowa, ØQDH in Kansas, was being heard in Chicago area. Not heard at 8KAY. The Chicago gang were hearing several in Nebraska. I had a meteor-scatter sked with 4LTU at 1430 EST, during the aurora. Nothing unusual noted. 4LTU reported the usual high burst rate on my sigs from meteor ionization. At 1440, with my beam still south, I heard 4HJQ. His sigs were S3, and pure aurora, all buzz, no T9. I could also hear him with my beam west. His signal with beam north was not a great deal stronger, so possibly the reflection was taking place from very high overhead. During this period, I heard some of the strongest aurora sigs I've ever heard. At 2200 EST, the aurora came back in and lasted until approximately 2400. Heard were KØEMQ, a few W1's, the usual flock of W2, W8, and W9. ØQDH was being

heard in Chicago area again."

"Tropospheric session started early Tuesday evening, with 5RCI heard at 2045 EST working 4HJQ. Rex was S7 on fone, 4HJQ was S9 off the back of his antenna. Many stations were on all night. During the nite, the gang in the Cincinnati-Dayton area were working Mo., Kansas, and Oklahoma on fone. Here in Akron, 150 miles Northeast, I could locate only a few S1 carriers of the Mo. stations. 4HJQ was also on all nite and told me he wasn't hearing much of anything either except S9 sigs from myself and some of the southern Ohio gang. 4HJQ said that he was getting TV stations on all channels at his QTH during the days, Wednesday (July 3). No one heard on 144 tho. Everyone at work perhaps."

"Wednesday evening (July 3) 5RCI was in again early, with good strong fone sigs, and shortly after, the Mo. stations started rolling in. There were many fone sigs heard here from Mo., most were good strong sigs, S7 or better. Conditions continued to improve, and by 0100 EST, 5DFU was S9 plus on fone, his sigs were absolutely local in nature; never imagined I'd hear 1000 mile sigs on 144 with a signal like he had. His sigs held up S9 until around 0300, then dropped slowly to S5 or S6 until daylight. 5DFU had a field day, worked many Ohio stations mostly in southern part of the state. I called 5AJG and ØZJB on landline during this time, and held the telephone handset up to the speaker so they could hear what a terrific sig 5DFU had. At around 0400, I was reading 5HXK in Watonga, Oklahoma on fone S6. I was still hearing 5DFU at 0500 EST. At that time, the band was quiet—he would call CQ (cw), then I would do so. He said I was the only sig he was hearing also. I fell asleep then, and slept till 0700. Not much doing at that time, everyone else trying to get a nap in after being up all nite. Around 0800 EST, things started picking up. 5JWL in Arkansas, 75 mi NE Texarkana, Texas, started rolling in with good solid T9 signals on cw. Heard him until around 1100 EST. At times, he was S7. He worked many in the Ohio area, furnishing most with a new state. 5DFU's best dx was 3FPH, Sharpsville, Pa. This, I believe, was a fone contact. 5DFU runs 250 watts to 4X150A final, 16 element antenna, very good hilltop VHF location."

"Around 0900 Thursday (July 4), I was hearing 5JWL (Ark.), 5RCI and K5AEH (both Miss.) (A3). 8SVI was heard calling CQ Alabama. 5RCI was QSO 4CTG (Huntsville, Ala.), Rex told me a few minutes later that CTG was hearing a few W8's. 4CTG not heard at 8KAY, I was busy trying to dig up a Georgia contact. Finally, at 1158 EST, I heard 4DBV (Rome, Ga.) calling me, S3. He reported my sigs 569. No other Georgia stations were heard, tho the Atlanta gang was alerted by landline. During the nite, VE3DIR (Toronto) was able to locate 5DFU's carrier around the time DFU was S9 in Akron. It was raining in Toronto, receiving conditions were poor, and Tony had worked 5DFU by meteor-scatter a month or so ago, so he went back to bed. 2CXY was on, but was able to locate only 9KLR and 3FPH. I had the two Okla. Stations (DFU, HXK) trying to hear 2CXY. The path to the eastcoast from Ohio was normal however. The last dx heard was 4DBV still working W8's around 1300 EST Thursday afternoon (July 4)." July 4: "Thursday nite, there was aurora from approximately 2300 EST to 0100 EST Friday (5th). Many sigs were very strong. 2BHS/4 in South Carolina was heard by many in Chicago area and on east coast. 4CVQ and 4ZXI (N.C.) had strong sigs. KØEMQ was hearing ØQDH in Kansas again. 4HJQ was on, 4LNG was alerted, and heard one station, 8WXV calling CQ at 0050 EST. During the June 30 aurora, 4LNG heard ØLFE, 8KAY, 8GZW, and worked 9KLR and

Southern New England 50 mc picnic. Left to right are a lot of guys (and gals).

4HJQ. A letter from ØQDH (Salina, Kansas): June 30 aurora, worked 5JWL at 1724 CST, heard Illinois, Indiana, no W8's. Nebraska stations told ØQDH they were hearing 8KAY and 4ZXI (N.C.) July 3, ØQDH heard Cincinnati, St. Louis stations, and 4HJQ in Kentucky. He worked several southern Ohio stations morning of the 4th, also Mississippi. ØQDH heard KØEMQ and 9VNW on aurora 2316 CST July 4: Aurora was noted at 8KAY from approximately 1725 to 1850 EST and 2255 EST to 0100 EST on the 5th. 4CVQ and 4ZXI (N.C.) had good sigs during the late session; also heard KØEMQ and many W2, W3, W8, W9. 2CXY and 9REM were S9 plus around 2345 EST."

July 7: "Tropo sessions started at 8KAY just before 2300EST, when I heard the Cincinnati area gang calling 5AJG in Dallas. At 2355, I first heard 5AJG, peaking S3 briefly, then down to a fairly steady S1-2. He disappeared at 0015. At 0100 I was hearing him again very weak, fading into the noise with occasional meteor bursts, then he was gone again. At 0235, 8IFX called me, telling me 5AQS near Dallas was reading me OK and wanted a contact. Heard him right away but very weak. He was readable, tho, but lost him due to QRM just as he was giving my report, and didn't hear him again until later in morning. I took a nap from about 0400 to 0630. At that time, I didn't hear anything, so put out several CQ'S. At 0712 EST, 5IOW (Ada, Okla.) called. His sigs peaking 4S. At 0738, heard 5AJG again and called him for QSO. At 0755 5AJG was peaking a solid S8 on fone, then dropped off to S6 for the next few hours. I worked him later, with his fone Q5. I had modulator trouble, so had to remain on cw. Shortly after 0900, a thunderstorm began building up at 8KAY, and the dx disappeared in the heavy static. Pulled the switch at about 1100 EST Monday (8th), was still hearing 8SDJ working W5's."

"Texas stations heard at 8KAY morning of the 8th: 5AJG, 5BEB, 5JOU, 5AQS. 8LOF (Piqua, Ohio—150 mi sw of 8KAY) worked six Texas stations during the morning. During the night and most of the morning, 5DFU (Tulsa) was heard consistently, though not as strong as on the 4th. There were few if any sigs heard in Mo, and Kansas. One of the Cincinnati gang said he heard Kansas. 4RFR, Nashville, was very strong at 8KAY around 0800-0900 EST, when he was working Okla. with his beam west. I alerted 2ALR and 8SFG by landline around 0830, but by the time they got on the band, the static level in northeast Ohio was high and the dx was snowed under with QRN. 8SFG (50 mi east of 8KAY) says he heard 5AJG's fone sigs during occasional lulls in heavy static."

"The contacts with 4DBV and 5AJG make states number 33 and 34 respectively for 8KAY. One of these (La.) is a meter-scatter contact made during the Perseids in 1956. The other 33 are either tropo or aurora, or both. I need only Florida to complete all states east of the Mississippi."

"These tropo openings were the first big ones to the west this year, though there have been a number into the Chicago area from 8KAY, with S9 fone sigs. To the east, there have been a few short periods of ten minutes or so, during skeds with 2CXY at 2100 EST nitely, when he peaked S9, but there has been no definite tropo openings to the east coast from the Ohio area to date (this year)."

"The boys lost a lot of sleep during this period (July 3 to 8th), but sure worked a lot of new states. Heard 9KLR tell 4LNG he was #34 for him (KLR), though I have been led to believe that he may have had two and possibly as many as five operators helping roll up this total via meteor scatter, etc."

"4LTU (Orlando, Florida.) says he is keeping statistics on burst rate from 8KAY sigs on my nightly 2230 EST CQ South (5 min. call), says rate is usually high. 8KAY also calls south (ten min. periods) at 1245 EST Saturdays and at 1430 EST Sundays, for 4LTU burst rate check. 5DFU, 5AJG, and others in the Texas, Oklahoma area report many meteor bursts on my sigs during nitely CQ WSW skeds at 2200 and 2300 EST and also during 2315 EST CQ WEST calls from 8KAY. 8KAY skeds 2CXY in New York City area, and Chicago area stations nitely with routine success."

July 8: "Aproximately 2340 EST, KH6UK (Oahu, Hawaii) and W6NZLZ (Los Angeles) started a one hour contact that really breaks the 144mc dx record (around 2500 mi). Sigs peaked 579. After signing with 6NLZ, KH6UK says he called CQ for three hours without hearing any other sigs. They have been running a nitely sked at 2330 EST for months, using 14,095 kc for initial contact, then KH6UK keying both 144 mc and 14 mc rigs simultaneously, calls 6NLZ for five or ten minute periods. KH6UK 144,000.00. W6NLZ 144,005.00, both use 1 kw into big antennas. Propagation appears to be tropospheric, the entire path of course being over salt water."

More on National Convention

"The VHF program will get under way Friday, August 30, for those who can get to town at that date, and will consist mainly of an open house and bull session for VHF men. There will be tours of some of the well known VHF stations for those who are interested. Highlights for the next three days are as follows:

A talk by W4HHK on his project, VHF forum, hidden transmitter hunts, a Meteor demonstration at the Planetar-

Les (VE3AIB) at home. The rack contains separate transmitters for 50. 144 and 220 mc with common modulator and power supplies. (Approx. 40-50 watts on each band). The tunable converter covers either 50 mc or 144 mc at the flip of a switch. The basic circuit came from September 1949 "CQ." "The Ultimate—" and is still doing a good job after nearly eight years constant use.

ium, Meteor propagation talk by W4LTU, a program by the South Jersey Radio Club, VHF banquet, and distribution of prizes."

"We are trying to make this a convention within a convention, and are looking forward to meeting one and all at the convention." The foregoing from a letter from Mel Mendelsohn (W9OBW.).

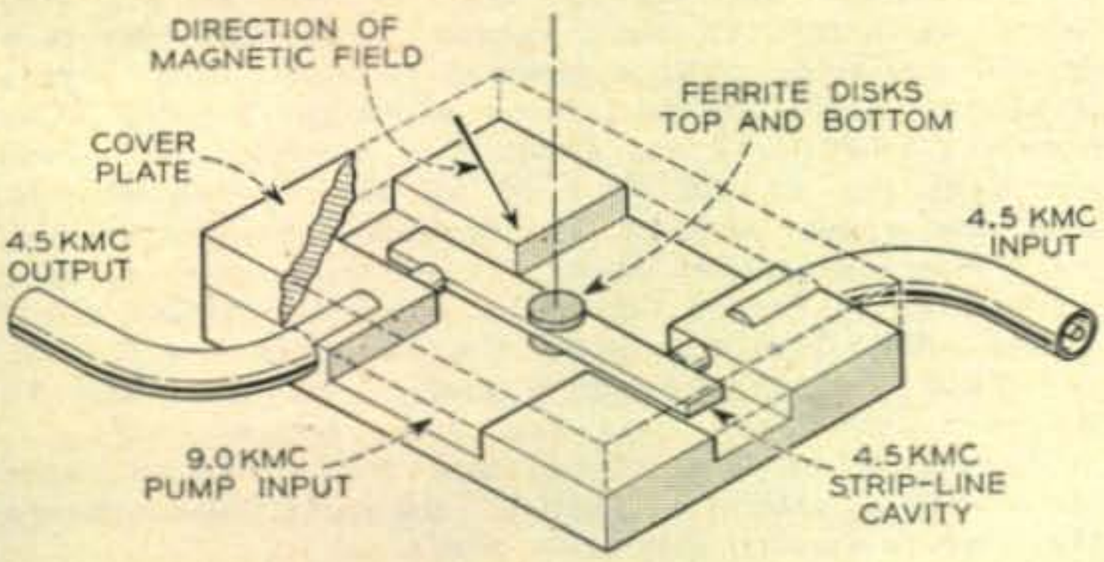
Maser's and Such

A new solid-state microwave amplifier using a ferrite material as the active element has been successfully operated at Bell Telephone Laboratories. The ferromagnetic amplifier was predicted on theoretical grounds by Dr. H. Suhl, and the experimental program was carried out by Dr. M. T. Weiss, both of whom are research physicists at Bell Laboratories.

"Although still in the laboratory stage, this amplifier is an important addition to the growing family of solid-state devices. *It operates at room temperature*, and is expected to have a much lower noise level than conventional microwave amplifiers. Thus it has exciting possibilities as an amplifier for very weak microwave signals such as may be encountered in the fields of radio astronomy, microwave relaying and radar."

"In principle, the present device requires that a ferrite sample be placed in a microwave cavity which is simultaneously resonant at two signal frequencies. Microwave power at a frequency equal to the sum of the two signal frequencies is then pumped into the cavity. A d. c. magnetic field, properly oriented and of sufficient intensity to cause gyromagnetic resonance at this sum frequency, must also be applied. Through nonlinear coupling in the ferrite, amplification or oscillation will be exhibited at either of the lower frequencies, or frequency conversion of a microwave signal can take place between these two frequencies."

Diagram of an experimental ferrite microwave amplifier which was built at Bell Telephone Laboratories.



Second Annual Picnic of the Southern New England Net

The second Annual Picnic of the Southern New England Net on 6 Meters had about one hundred and forty at the gathering, including a W6/1, Fong Foo and his XYL from Hollywood, now living in Swansea, Mass.

The chairman and also net control, Howie Walker, WIVWR was in charge. He was assisted by Doc, W1TXL; Chuch, W1FIG; Marco, W1GVQ; and Smitty, K1BWX.

The group was honored by a visit from "Our Own Vivacious June Burkett, W1VXC," the SCM for Rhode Island, and her OM Bob, W1OGT.

The foregoing from a letter received from Bob, W1FVZ, who also helped around the 'do'. We understand that it was quite a picnic and should be watched for again next summer.

Second Annual N. E. Ohio Picnic

Attendance at this picnic amounted to five hundred and fifty people, and a good time was had by all. The group was very pleased to welcome as one of the guests, Leo Meyerson, WØGFQ.

There was C. D., MARS and everything one would expect at a picnic for amateurs. The group in charge of planning etc., certainly did an excellent job for their first time to undertake such a large venture as this.

Claire Sutton, W8CMS, was the amateur of the day, and as you know Claire was the first W8 to get WAS. We surprised him with a certificate from the 50 mc group (courtesy of K8AOG). Also among the surprises was a case of champagne given to Claire by Ben, W8HXT. Some time ago Ben had jokingly promised Claire a case of champagne if he was the first W8 to get WAS. Claire was, and Ben did. Arline Hawkins, W8SSF sends this information to us.

Six Meters and the South Pole

John Guerrero, KL7BNJ has a Tapetone

six meter converter with him at the south pole and is listening for you. If the band opens up from that direction don't be the one who missed him. Keep him in mind for the next year. Seems to me some of the South American stations should hear him.

He is also on twenty with the Collins gear down there—at least he should be.

Anyone for 404's?

Piermont, New Hampshire William Deal, (K1CLD) helps out with information:

"In the last 'CQ' I note that you are wondering where one obtains 404A tubes. This would appear to be a W. E. tube—and it should be possible to get them through Graybar. However, I had a listing last fall from a place known as 'State Labs Inc', 649 Broadway, New York 12, New York, listing L. M. Ericsson 10,000 hour tubes made under W. E. license. The #404A/5847 is priced at $15.50 each. They also quote on 417A/5842 —$15.50. Anything that L. M. Ericsson makes is good—and 'State Labs Inc.' is a reliable outfit, as far as I know. I have bought from them."

"I am passing out these priceless pearls of information in celebrating the arrival of my ticket. Just came—K1CLD." *Congratulations, Bill. Hope we see you soon on the air.*

And still more tubes!

Ardsley, New York Bob Bell (KN2VPL) has both questions and answers for us:

"While I was reading through your July VHF column, I read that 416B's were $15.00. The only place I've seen that had them was 'Barry Electric' at $39.00. Where can I get one for $15.00?"

"You also mentioned 404A's. Again 'Barry Electric' of New York has them for $12.50."

"I've got a rig just about built for two meter cw and maybe phone. By the time it's completed (at my speed), I'll probably have my General." *Thanks for the info, Bob. See you on two meters.*

404A's—Have two—How Much?

Philadelphia, Pennsylvania Albert Rapp, 667 Montgomery Avenue, Philadelphia 11, Pa., says shortly but sweetly:

"I have two new 404A's, Western Electric. Do you know anyone who is interested? If so, tell them no reasonable offer will be refused." *The line forms to the right boys, and please note that Al's address is right after his name at the beginning of the note.*

The following note from Mr. T. Lanman of "Tapetone Inc.":

"We will have the two and six meter converters for the National Receiver about June 20th. The two meter converter will be our XC-144-N and the six meter converter will be our XC-50-N, with both output IF frequencies being 30-34 mc."

"We will also have a Power Supply available on June 20th, which will be our PSR-150."

W8PYQ writes and tells us that the Junk Box six meter mobile as shown in the June issue on page 91 has a slight error in the diagram. The collector and emitter leads are reversed on the third transistor from the left. *So get out your June copy right now and put the arrow on the top connection and remove it from the bottom one. OK.*

Newark, New Jersey Walt (W2CXY) sez:

"Thanks for the mention in 'CQ' July VFH column. It apears, however, that the feller or gal who does your ghost writing is not a two meter operator, else very well known WØIFS's call would not have been printed as WØIPS. Russ, I am sure, would be much too modest to bring this slip to your attention." *He was Walt, thanks for the correction.* Must have been the printer's error(?). (Not me!)

Woodberry Forest, Virginia We hear from that good old state again, via Lynn Hammond (K4KLC):

"I am fourteen years and have recently gotten on six meters. My home QTH is Roanoke, Virginia and will be on the band from there after August 10."

"The rig is a S-106 receiver and a L. W. 50 transmitter, running about ten watts output. The beam is a Gotham element job. The frequencies are 50.652, 50.250 and 53.940. I'll be ready for the fellows who say 'and listening from the high end of the band down' ". *You shore will be there waiting for them, won't you Lynn?*

"The nearest six meter station is in Lexington, but I think I'll be able to work them if I can get my beam on the roof." *Nice to know of one more from your area on six meters, Lynn. Lots of the east coast boys need that state badly.*

Valley Station, Kentucky A 'Thank You' from Jim Bohler (KN4LRV):

"Just a line to thank you for your article in July issue which suggested the VHF'ers tune from the high end down.

"I have worked nine states on two meters setting at 145.080 with six watts to a thirty-two element beam, 45' up, but this was done only with the help of W4HJQ and W4MKJ having the fellows look up the band for me."

"Too many times during band openings I have called stations which were 20-30 over at my QTH, only to have them snagged time after time before they get out of the first four hundred kc of 144."

"Took my exam two weeks ago and will soon be moving down in frequency and up in power but I for one promise to tune DOWN the band." *Thanks Jim, it's always good to know that some of the gang feels as I do about the whole thing.*

Painesville, Ohio Bill Richardson (W8SLE) from the old stamping ground came through with:

"We have a very active net here on six meters, serving both Lake and Geauga counties. All of the old Chardon gang are on it, W8QXE, W8SVQ, W8EIL, W8FFA, W8SKP, all guys you and Sam have met at one time or another. *We most certainly have!* And then we have W8RAZ, W8DBZ, W8FVL, W8RBD and W8DKU on from Lake County. I heard you on July 12th at 2020; be sure to keep your beam pointed down this-a-way-and work some of your old neighbors." *Will do, Bill, and a pleasure it always is, too.*

New York City, New York From good old New York, New York, and Rich (K2UOY) comes the following:

"Just letting you know that I'm looking for DX skeds on two meters, and I hope someone reading this will be interested. My rig is nothing spectacular, just thirty watts into an eight element beam. Receiver is a crystal converter with a cascode preamp. Noise figure is about 4.5 db. The best thing about my station is its excellent location. I am about five hundred feet above sea level, far in the clear of all surrounding objects, and have a clear shot in all directions for miles around. *VHF man's dream, eh Rich?* For example, running four watts into an indoor ten meter dipole, I worked about ninety miles. This was without a band opening." *Yeah, but what I want to know is first of all how come an indoor antenna and next how come ten meters?*

"I operate cw and phone, and would like to make skeds with all interested parties." *All right fellows, now's the time to swamp him with skeds.*

Jamaica, New York Dave Still (K2VTX) sez:

"As soon as I get my technician ticket I will be heard on fifty megacycles. I am pretty near completed with K2AVB's six meter rig fer a fixed rig."

"After listening to six meters for a little while it has really gotten me interested in skip work."

"My interest was first fired up when I heard K2LDK work an LUI on six meters, but the main thing was when I was at W2IDC's QTH and let out with a 'CQ'. Next thing I knew W4's, 5's, 8's and 9's were rolling in. That did it." *Good luck to you on six meters, Dave, I'm sure you'll like the band, dx or no.*

Muskegon, Michigan From Herb (K8CIC), first Honorary Member 6 Meter Club of Dallas, outside of the state of Texas, we hear:

"Still haven't gotten a card out of Connecticut, boy they sure are hard to get (these QSL's). We have worked forty-one states on six meters and have thirty-eight confirmed. Wonder what happened?"

"Heard a Florida station this morning ask again for a QSL from a W9 station. I worked this same W4 quite a long time ago for one of my first Florida stations and have worked him once since that, but still no QSL. We have disposed of 500 and then some cards and have about fifty per cent return. How about it fellows: Have a brand new order of QSL's on the rack here and lots of stamps. Anyone need Michigan toward WAS? Come and get them. We can't all have WAS, so I'll help you guys get yours. Lots of others in the same boat as I am." *How true, how true, Herb. I guess about all we can do is mention it now and then. Hope you get some good results from the letter. Did W1HOY QSL you?*

Phoenix, Arizona So seldom heard from on six meters, Arizona, (on the east coast, that is) is now heard via the VHF column and Fred Redding (W7PLW).

"Members of the Phoenix VHF Radio Club will set up operations about twenty miles north of Flagstaff, Arizona on August 31st, 1957 at 1200 MST and operate until about 1200 MST Monday, September 2nd."

"The operation site will be the San Francisco Peaks. Rigs will be operated on six meters, two meters and 420 megacycles. Will operate from 10,000 feet elevation. Call to be used, W7VMP. *We know that call.*

"Would you please have any of the staff who are hams (*who isn't?*) please pass the word along over the air? If operation is successful, we plan to make this a yearly event." *Good luck to you Fred and the rest of the club members. Let's hope that it's highly successful and that we'll work you year after year after year, etc.*

Marissa, Illinois Bob (K9EID) sends a bit of information:

"Well, six meters looks like things are going to be fine this summer! I have worked thirty-seven states, three VE3's, one VE2, and two CO2's in the last three weeks. *You must be cheating, Bob.* I worked out very well with my little 6146 peanut whistle."

"Six meter activity around the St. Louis area has greatly reduced by KTVI, Channel 2. The harmonics from KTVI are knocking the receivers terribly."

"We are still looking for some six meter activity in Southern Illinois. We have never heard any six meter stations south of us here in Marissa." *Thanks for the dope Bob, always nice to get news from Illinois.*

Fort Worth, Texas The wide open spaces and Bill (W5CVW) emit with:

"Finally worked Helen and enjoyed it immensely. *Me too—Helen.* Six has been red hot here since the first of May. In fact, in the last four weeks I have run my states worked list from a mere twenty-seven to forty-one—so WAS is now in sight. Just give me one good opening into New England and I'll just about have it made. *I tried and tried Bill, but just couldn't come up with the right kind of opening, FOR You.* Biggest headache here is trying for New Mexico, (me too—Helen) and I know I'm not alone!"

The "Three Jims" Certificate from Houston, Texas. (See Letters.)

"Good openings here into South America and Cuba in May and June."

"I lose a lot of contacts with stations that lack audio. Just a hint to many of the gang, get the audio punch in here, it surely does help."

"The new six element Telrex beam is a jewel. Just about everything I need here. It is up sixty-two feet high, in the clear, with an eight element Telrex two meter beam above it. The rig is a 4-125A, VFO, 350 watts. Receiver is an NC300 with National Converter. No problems here."

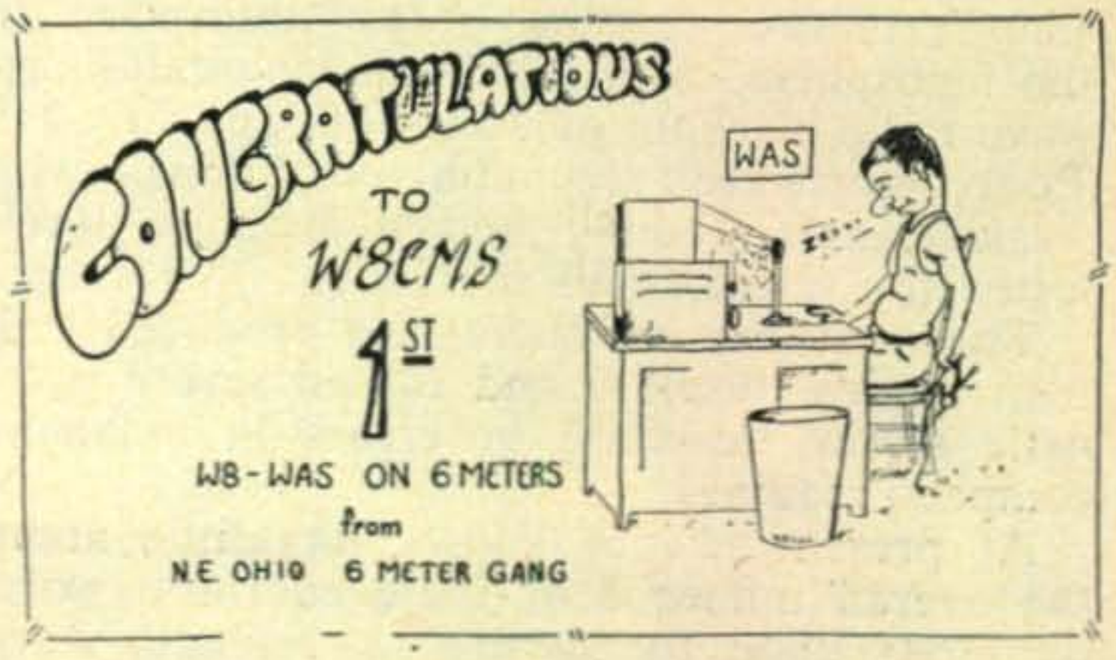
"There is no doubt in my mind that this six meter band is the best one we have. Its possibilities are unlimited. For emergency work it is absolutely tops. It is now the official emergency band in the Fort Worth, Dallas area. The mobiles that use the Halo antenna can be worked from the fixed stations (with beams) up to seventy-five miles, occasionally even more." *Hope you have your WAS by the time this appears in print, Bill. Good luck!*

New Brighton, Pennsylvania Glenn Baker (W3GLZ) emits from Pennsylvania:

"I have just received my Technician Class license and would like to operate on six meters. I have a Viking 6n2 and a 6 element beam for six meters. I also bought a S-106 receiver. The S-106 doesn't seem to work too good. I also have an SX-100. Could you tell me a good six meter converter to use with the SX-100?" *How about it, you fellows with the SX-100's. Give Glenn some information on what you're using. And congratulations to you Glenn fr getting the Technician Ticket.*

[*Continued on page 100*]

The W8CMS certificate of achievement. First W8 50 mc WAS.



PROPAGATION

George Jacobs, W3ASK
607 Beacon Road,
Silver Spring, Md.

Sunspot Record Broken

A new sunspot record has been established. Solar activity, and the accompanying radiations upon which shortwave radio propagation conditions depend, are now more intense than ever observed before during the 200 years that records of this sort have been kept. The Swiss Federal Solar Observatory reports that the monthly *relative* sunspot number for June was 205.6. This results in a 12-month running *smoothed* sunspot number of 163 centered on December, 1956. This level of solar activity exceeds the previous high record of 158.5 established during May, 1778, *and the peak of the present cycle has not yet been reached!*

Great Solar Explosion

The unusually intense solar activity observed during June, 1957 reached a climax on June 28th when a great explosion took place on the sun. This explosion, or *solar flare* as it is properly called, was one of the brightest ever observed. Erupting from an enormous sunspot more than 25 times the area of the earth, sheets of gaseous flame leaped *hundreds of thousands of miles* above the sun's surface. (See *Figure 1*). The flare showered the earth's atmosphere with vastly increased quantities of solar radiation causing heavy absorption in the ionosphere, with a subsequent total shortwave radio blackout on June 30th and July 1st. Poor shortwave reception conditions, with weak signals, fading, and high noise levels lasted for several days thereafter.

The solar bombardment also produced brilliant auroral displays and caused severe magnetic storms resulting in errors in magnetic compass readings.

At present science knows very little about the overall influence of these enormous solar outbursts upon the earth's atmosphere, since

ALL TIMES IN EST

Eastern USA To:	10 Meters	15 Meters	20 Meters	40/80 Meters
Western Europe	7A-9A (1) 9A-2P (3) 2P-6P (2)	5A-10A (3) 10A-2P (2) 2P-4P (4) 4P-7P (2)	4A-2P (2) 2P-8P (4) 8P-11P (2) 11P-4A (1)	5P-7P (1) 7P-2A (3) 7P-2A (2)*
Southern Europe & North Africa	6A-8A (1) 8A-10A (3) 10A-2P (4) 2P-6P (2)	5A-7A (3) 7A-1P (2) 1P-5P (4) 5P-8P (2)	7A-12N (1) 12N-3P (2) 3P-8P (4) 8P-11P (3) 11P-7A (2)	6P-8P (2) 8P-12M (3) 12M-2A (2) 7P-12M (2)*
Eastern Mediterranean	6A-8A (1) 8A-12N (2) 12N-2P (1)	5A-8A (2) 11A-3P (2)	12N-3P (1) 3P-5P (2) 5P-11P (3)	6P-11P (2) 8P-10P (1)*
Central & South Africa	8A-10A (1) 10A-2P (2) 2P-5P (4) 5P-7P (1)	10A-5A (1) 12N-3P (2) 3P-6P (4) 6P-12M (2)	2P-6P (2) 6P-9P (4) 9P-2A (3)	6P-11P (2) 7P-10P (1)*
South America	1P-6P (1)** 5A-10A (3) 10A-2P (2) 2P-6P (4) 6P-8P (2)	5A-9A (3) 9A-3P (2) 3P-8P (4) 8P-11P (3) 11P-2A (2)	1A-6A (3) 6A-8A (2) 3P-7P (3) 7P-1A (4)	8P-3A (3) 3A-6A (2) 9P-3A (1)*
Philippine Islands & East Indies	4P-7P (1)	8A-11A (1) 4P-8P (2) 8P-10P (1)	6A-9A (1) 8P-2A (2)	NIL
Australasia	9A-11A (1) 4P-7P (3) 7P-9P (1)	8A-10A (3) 10A-12N (1) 3P-6P (1) 6P-9P (3) 9P-11P (2)	6A-9A (3) 9A-11A (1) 8P-11P (2) 11P-2A (3) 2A-6A (2)	3A-4A (2) 4A-6A (3) 6A-8A (2) 4A-6A (1)*
Guam & Pacific	3P-5P (2) 5P-7P (1)	9A-11A (1) 3P-5P (2) 5P-9P (3)	6A-8A (1) 6P-9P (1) 9P-2A (2)	10P-3A (1)
Japan & Far East	4P-7P (2)	7A-9A (1) 3P-5P (2) 5P-8P (3) 8P-10P (1)	6A-9A (3) 4P-6P (2) 6P-8P (3) 8P-1A (2) 1A-4A (1)	NIL
Malaya & South East Asia	2P-5P (1)	7A-10A (1) 3P-5P (1) 5P-9P (2)	6A-9A (1) 5P-10P (2)	NIL

ALL TIMES IN CST

Central USA To:	10 Meters	15 Meters	20 Meters	40/80 Meters
Western & Central Europe	8A-10A (1) 10A-1P (3) 1P-4P (1)	6A-9A (3) 10A-1P (2) 1P-3P (3) 3P-5P (2)	5A-7A (2) 7A-2P (1) 2P-7P (3) 7P-2A (1)	6P-12M (3) 8P-1A (1)*
Southern Europe & North Africa	7A-9A (1) 9A-11A (2) 11A-2P (3) 2P-4P (1)	5A-7A (2) 7A-12N (1) 12N-3P (4) 3P-6P (2)	3A-6A (1) 12N-2P (1) 2P-4P (3) 4P-7P (4) 7P-11P (2)	6P-12M (3) 8P-12M (1)*
Central & South Africa	8A-10A (1) 10A-2P (2) 2P-4P (4) 4P-6P (1)	12N-2P (2) 2P-5P (4) 5P-11P (2) 11P-4A (1)	2P-6P (2) 6P-8P (4) 8P-12M (3)	6P-10P (2) 7P-9P (1)*
Central America & Northern South America	6A-11A (3) 11A-4P (4) 4P-6P (3)	5A-9A (3) 9A-2P (2) 2P-6P (4) 6P-12M (3)	8A-4P (2) 4P-11P (4) 11P-8A (3)	5P-8P (2) 8P-2A (4) 2A-6A (2) 7P-3A (3)*
South America	1P-6P ** 5A-11A (3) 11A-2P (2) 2P-5P (4) 5P-7P (2)	1A-5A (2) 5A-9A (3) 9A-2P (1) 2P-8P (4) 8P-1A (3)	2A-5A (3) 5A-8A (2) 3P-7P (3) 7P-2A (4)	7P-2A (3) 2A-5A (2) 8P-2A (2)*
Japan & Far East	1P-7P (2)	6A-9A (1) 1P-3P (2) 3P-7P (3) 7P-10P (2)	6A-9A (3) 2P-4P (2) 4P-10P (3) 10P-2A (2)	12M-6A (1)
South East Asia	1P-3P (1) 3P-6P (2)	7A-12N (1) 12N-7P (2) 7P-9P (1)	6A-9A (1) 5P-7P (1) 7P-1A (2)	NIL
Hawaii	11A-2P (2) 2P-7P (4) 7P-9P (3)	8A-2P (3) 2P-9P (4) 9P-11P (3) 11P-2A (1)	9A-4P (2) 4P-8P (3) 8P-2A (4) 2A-9A (3)	1A-7A (3) 2A-6A (2)*
Australasia	7A-9A (1) 2P-4P (2) 4P-7P (3) 7P-9P (2)	7A-10A (2) 10A-3P (1) 3P-5P (2) 5P-10P (3) 10P-1A (2)	1A-6A (2) 6A-9A (3) 4P-6P (1) 6P-10P (2) 10P-1A (4)	12M-7A (3) 1A-6A (2)*
McMurdo Sound, Antarctica	12N-2P (1) 2P-6P (2) 6P-9P (1)	1P-3P (1) 3P-5P (2) 5P-10P (3) 10P-1A (2)	3P-5P (1) 5P-7P (2) 7P-1A (3) 1A-7A (2)	12M-6A (2) 1A-4A (1)*

ALL TIMES IN PST

Western USA To:	10 Meters	15 Meters	20 Meters	40/80 Meters
Europe & North Africa	7A-9A (1) 9A-1P (2)	6A-9A (1) 9A-2P (3) 2P-5P (2)	11A-1P (1) 1P-6P (3) 6P-12M (2) 12M-2A (1)	6P-11P (1) 7P-10P (1)*
Central & South Africa	7A-9A (1) 9A-12N (2) 12N-4P (3) 4P-6P (1)	9A-11A (1) 11A-1P (2) 1P-3P (3) 3P-6P (4) 6P-9P (2)	11A-2P (1) 2P-4P (2) 4P-8P (4) 8P-12M (3)	6P-10P (2) 7P-9P (1)*
South America	11A-5P (1)** 6A-12N (2) 12N-4P (4) 4P-7P (2)	12M-10A (2) 10A-12N (1) 12N-2P (2) 2P-6P (4) 6P-12M (3)	12M-4A (2) 4A-8A (1) 2P-4P (2) 4P-10P (4) 10P-12M (3)	5P-2A (3) 6P-12M (2)*
Guam & Mariana Islands	5P-7P (1)** 12N-2P (4) 2P-5P (3) 5P-7P (4) 7P-9P (2)	7A-9A (2) 11A-1P (2) 1P-7P (1) 7P-10P (3)	6A-9A (3) 9A-11A (1) 9P-11P (1) 11P-2A (3) 2A-6A (2)	1A-4A (2) 2A-3A (1)*
Australasia	5P-7P (1)** 9A-12N (3) 12N-5P (2) 5P-8P (4) 8P-10P (2)	12M-4A (2) 7A-12N (2) 12N-4P (1) 4P-8P (2) 8P-12M (4)	3A-6A (3) 6A-9A (2) 8P-10P (2) 10P-3A (4)	10P-6A (3) 11P-5A (2)*
Japan, Okinawa & Far East	11A-1P (3) 1P-4P (2) 4P-9P (3)	11P-1A (2) 7A-11A (3) 11A-7P (2) 7P-11P (3)	10P-12M (2) 12M-2A (3) 2A-6A (2) 6A-10A (3) 10A-12N (2)	12M-5A (3) 1A-4A (2)*
Philippine Islands & East Indies	8A-2P (2) 2P-4P (3) 4P-9P (2)	7A-10A (3) 10A-2P (2)	2A-4A (1) 4A-7A (3) 7A-10A (1)	3A-7A (1)
Malaya & South East Asia	7A-11A (2) 3P-6P (2) 6P-10P (1)	7A-11A (3) 11A-4P (2) 10P-12M (1)	12M-4A (1) 4A-8A (3) 8A-10A (1)	3A-7A (1)
Hong Kong, Macao & Formosa	12N-3P (3) 3P-10P (2)	8A-12N (3) 12N-9P (2) 9P-12M (3)	12M-4A (4) 4A-8A (3) 8A-11A (1) 10P-12M (1)	2A-6A (3) 3A-5A (2)*

CQ PROPAGATION CHART

(SHORT - SKIP)

BAND (METERS)	DISTANCE (MILES) 50-250	250-600	600-1200	1200-2200
10	--	--	12N-5P (1)	8A-11A (2) 11A-1P (3) 1P-5P (4) 5P-7P (1)
15	--	2P-6P (1)	8A-12N (2) 12N-6P (3)	8A-12N (3) 12N-5P (4) 5P-9P (3) 9P-12M (2)
20	--	8A-1P (1) 1P-6P (2)	6A-11A (3) 11A-6P (4) 6P-9P (2) 9P-12M (1)	8A-2P (3) 2P-11P (4) 11P-1A (3) 1A-8A (2)
40	7A-7P (4) 7P-10P (3) 10P-5A (1) 5A-7A (2)	7A-10A (4) 10A-4P (3) 4P-12M (4) 12M-7A (2)	8A-6P (3) 6P-11P (4) 11P-5A (3) 5A-8A (4)	4P-7P (2) 7P-5A (4) 5A-10A (3)
80	6A-11A (4) 11A-6P (3) 6P-12M (4) 12M-6A (3)	5P-7P (3) 7P-9A (4) 9A-5P (1)	5P-7P (1) 7P-4A (4) 4A-7A (3) 7A-9A (1)	6P-8P (1) 8P-5A (3) 5A-7A (2)
160	6P-7A (5) 7A-10A (3)	6P-8P (2) 8P-5A (4) 5A-7A (3)	7P-10P (2) 10P-3A (3) 3A-5A (2)	10P-5A (2)

SYMBOLS FOR NUMBER OF DAYS CIRCUIT PREDICTED TO OPEN:

(1) 1-4 days (2) 5-11 days (3) 12-18 days (4) 19-26 days (5) over 26 days

** Indicates time of possible six-meter openings
* Indicates time of possible eighty-meter openings

The CQ DX Propagation Charts are based upon a CW radiated power of 150 watts and are centered on Washington, D. C., St. Louis, Mo., and Sacramento, California. The CQ Short-Skip Propagation Charts are based upon a radiated power of 75 watts. These forecasts are calculated from basic ionospheric data published by the CRPL of the National Bureau of Standards and are valid through October 15, 1957.

Last Minute Forecast

"Ionospheric disturbances peak in occurrence during the equinoctial period. Moderate to severe shortwave radio storminess is forecast for September 15-24, with September 7-9 unstable. During the remainder of the month the ionosphere should be relatively undisturbed."

---

a period of such intense sunspot activity has never been observed previously. It is considered fortunate therefore that the present period of unprecedented solar activity coincides with the beginning of the International Geophysical Year. This gives scientists and engineers throughout the world the opportunity to put this unusual behavior of the sun under intense scrutiny. It is expected that during the 18 months of the IGY much more will be learned about the sun's influences upon radio propagation conditions and the earth's atmosphere in general.

Propagation Conditions—September

The following is an overall picture of band conditions forecast for September, 1957, with a brief discussion of the month-to-month qualitative changes that take place in each amateur high frequency band. For specific times of band openings for a particular DX or short-skip circuit, refer to the *CQ Propagation Charts* on the opposite page. This month's forecasts are based upon a predicted smoothed sunspot number of 152 centered on September, 1957.

6 Meters:

As a result of present intense solar activity, the six-meter band is expected to open again this fall and winter for world-wide DX. While conditions won't peak until the winter months, the band should open to South America on a few days during September and early October during the afternoon and early evening hours. Some six-meter openings are also likely to occur between California and the western Pacific during the afternoon and early evening hours. In other areas of the world, where ionization is more intense, considerably more frequent six-meter openings are likely to occur. For example, between Hawaii and the Far East the *maximum usable frequency*, or MUF, is expected to rise above 50 Mcs on more than half the days of the month between 0100 and 0500 *GMT*. Not as many short-skip openings expected during September because of the sea-

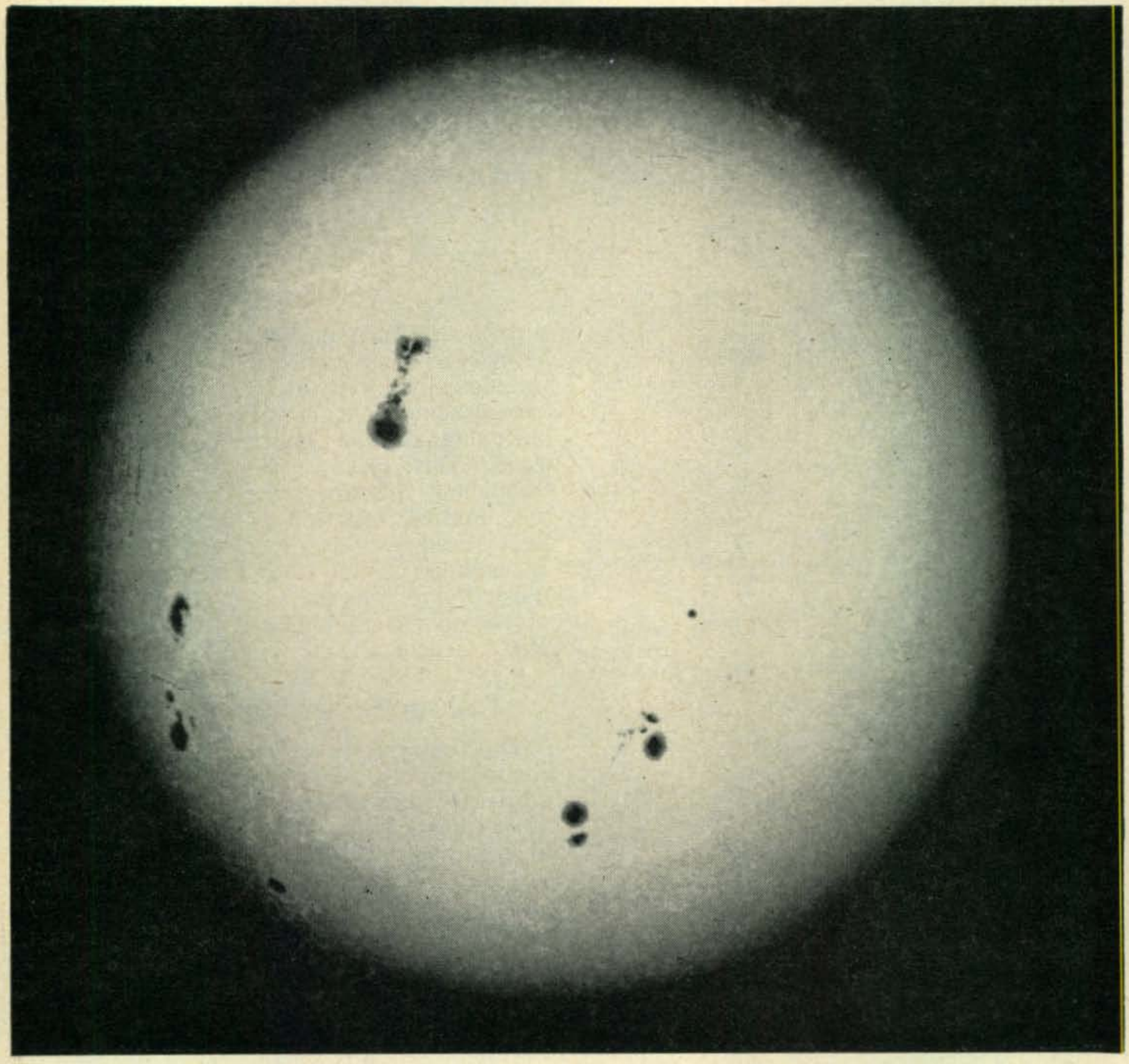


Fig. 1: The large dark area is the enormous sunspot detected on the sun on June 24th Four days later this sunspot erupted into one of the most brilliant solar explosions ever recorded, and caused a shortwave radio blackout.
—U. S. Naval Observatory Photo.

sonal decline in sporadic-E propagation.

10 Meters:

Propagation conditions on ten-meters are expected to improve considerably during September. Good world-wide openings should be possible on most days of the month from a few hours after dawn until early evening. Optimum conditions are likely to occur during the afternoon hours when signal strengths reach their maximum intensity on most circuits. Short-skip openings, between approximately 1000 and 2200 miles, should also occur during the daylight hours on most days during the month.

15 Meters:

Exceptionally good world-wide DX propagation conditions are expected to occur almost daily from shortly after sunrise, to considerably after sunset. On many days the band may remain open to some areas of the world past midnight. Propagation on 15-meters are optimum during the late afternoon and early evening hours. During this period signals from all areas of the world should be heard with relatively strong signal strength. Short-skip propagation, for distances between approximately 600 and 2200 miles, is also likely to occur almost daily during the afternoon hours.

20 Meters:

During the late afternoon and

THE *New Look* FROM *National* . . .

From the World's Largest Distributor of Amateur Radio Eqpt.!

National's NC-109

A modern, low-cost receiver with an exclusive "Micro-tome" crystal filter and separate product detector for CW and SSB reception. Includes large "S" meter, 4-band coverage (540 kc. - 40 mc.), voice, CW or SSB reception. Bandspread calibrated for 10-80M. An 11" lucite slide-rule dial, accessory socket for external adapters and other accessory devices. 11 tubes including rectifier and voltage regulator. Two-tone metal cabinet with chrome trim measures 16 3/16 x 10 x 10 7/8". Weight: 35 lbs.

Only $16.20 per mo.

Pay $20.00 Down — Cash Price: $199.95

National's NC-188

A top-quality, low-cost receiver, directly calibrated for the 4 general coverage ranges and 5 bandspread ranges for the amateur bands (80-10M). Also covers 540 kc. to 40 mc.; voice or CW. Features include calibrated bandspread for 10, 11, 15, 20, 40 and 80M; separate tuning capacitors, knobs and scales for general coverage and bandspread; large easy-to-read 11" slide-rule dial, and front panel "S" meter for signal strength indication and more accurate tuning. Size: 16 3/16 x 10 x 10 7/8".

Only $12.96 per mo.

Pay $16.00 Down — Cash Price: $159.95

And Write for Detailed Info on the Four Great Globe Xmttrs!

Globe King 500B
540 Watts, CW - Fone
$39.14 per mo.
Cash Price: $699.00

Globe Champion 300
300 Watts, CW - Fone
$25.14 per mo.
Cash Price: $449.00

NEW Globe Scout 680
6-80M, Fone & CW
$8.10 per mo.
Cash price: $109.95

Globe Chief Kit
90 Watts CW
$5.00 per mo.
or $54.95 Cash

And Only 10% Down

Certified by the FCDA on factory wired and tested models for Crystal Controlled Operation!
All WRL Transmitters operate on most of the CAP and MARS frequencies!

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on your _____ (WRL Eqpt. Desired) C-9/7

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Address: _____

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For further information, check number 24 on page 126.

evening hours, propagation conditions on this band are expected to be exceptionally good to almost all areas of the world. During the hours of darkness 20-meters should be the best band for DX. Short-skip propagation should be possible from dawn through midnight, with the skip as short as a few hundred miles at noon and extending beyond 2200 miles during the late afternoon and evening hours.

40 Meters:

A seasonal improvement is expected for 40-meter propagation conditions during the hours of twilight and darkness. Fair DX openings are likely to occur to many areas of the world during these hours. Static levels are lower during September and signals somewhat stronger than during the summer months. Short-skip propagation should be possible around the clock, with the skip distance as short as a few miles during the afternoon hours, increasing to beyond 2000 miles as the hours of darkness approach.

80 Meters:

Although improving as winter nears, 80-meter propagation conditions will be generally poor during September. Some long distance openings, beyond 2000 miles, are likely to occur during the hours of darkness, or pre-dawn period, but static levels will be quite high and signal levels generally weak. During the daylight hours, ionospheric absorption will limit maximum range to about 200 miles or so, with range increasing as darkness approaches.

160 Meters:

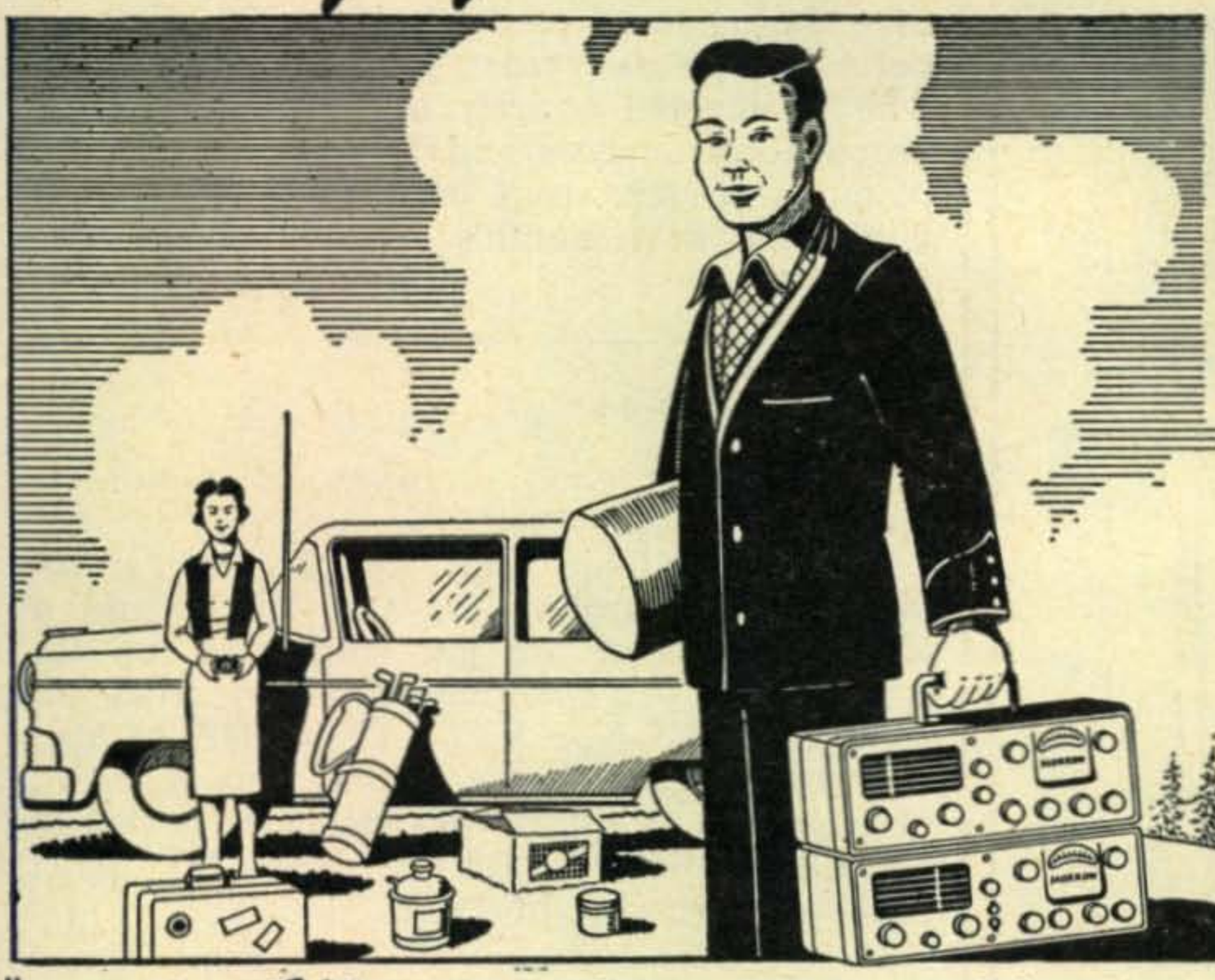
Because of extremely intense daytime absorption in this part of the spectrum, 160-meter skywave propagation is not possible during the *daylight hours* of September. During this period, range is limited to the line-of-sight groundwave component of the signal. From shortly after sunset, until shortly after sunrise, ionospheric absorption decreases considerably and short-skip propagation up to about 1300 miles should be possible on most nights during the month. When static levels are low, the skip may extend considerably beyond this range.

CQ World-Wide DX Contest

The following are the dates announced for

THIS YEAR . . .

Enjoy a Morrow Vacation!



Take ***Morrow*** along, too, and have a wonderful vacation. Do your hamming enroute and also use as a portable station. Please the XYL by working the home QTH.

MB-560A:	**60-watt Transmitter,** built-in VFO and modulator	$214.50
MBR-5: or **FALCON:**	**Deluxe Receiver,** S meter, 100 KC crystal standard, noise balance squelch	224.50
	Receiver with Broadcast Tuner as an accessory, serves for Conelrad Monitor, selective bandpass: narrow 2.8 KC, broad 9.2KC; with BCT	189.00
	MBR-5 and Falcon have 1 microvolt sensitivity for 16db signal to noise ratio on 10 meters, excellent frequency stability.	
TV-600:	**High Voltage Vibrator Power Pack,** 600 volt, 200 ma, features silicon rectifiers	79.50
RVP-250:	**Vibrator Power Supply** for receiver and exciter of transmitter	39.95
CBM6 or 12:	**Cable** for interconnecting above units	9.95
MK-N1:	**Modern Cylindrical Microphone**	16.95
MLV-50:	**Remote Control Antenna Tuner**	24.95
SH-7:	**Speaker** for mobile installation	11.50
RTS-600S:	**AC Power Pack** with speaker for portable use of MB-560A and either MBR-5 or Falcon	107.50
CBF7-7 / **CBF8-8**	**AC Cable** for RTS-600S	9.95

All Prices Are Amateur Net

Prices and specifications subject to change without notice.

SEE YOUR JOBBER

QUALITY AND PERFORMANCE

MORROW

radio manufacturing co.

2794 Market St. Salem, Ore.

For further information, check number 25 on page 126.

the CQ World-Wide DX Contest for 1957:

October 26-27 Phone
November 30-December 1 CW

It appears now as if propagation conditions during the 1957 Contest period may be better than during the record breaking 1956 Contest period. As in past years, next month's column will be devoted entirely to a Contest period propagation analysis and forecast. If you are planning to take part in this year's Contest, don't miss next month's Propagation column.

73, George, W3ASK

RTTY [*from page 71*]

to swap for a good recent-model comunications receiver or other gear.

K4OTD and his XYL K4MTY, of Greenville, South Carolina, have a 75A-4 and a KWS-1 and they are just getting set up for RTTY. (*CQ will soon have a feature article on using the KWS-1 on RTTY.*) W4YNZ, of Fort Monroe, Virginia, just got going, too. K4GEC, of Hampton, Virginia, was bitten by a visit to KL7CK (AFC for RTTY, Nov. '55, p56) back in November of 1954.

Comments

W6CG would like us to stress the fact that RTTY is *not* an expensive adjunct to an amateur radio station. The un-initiated always feel that the installation of radioteletype gear is an extremely complicated and costly process. This is anything but the true state of affairs. Actually, a feller can obtain a Model 26 for around 75 to 85 bucks and a converter, or "terminal unit" can be built from parts out of the average junk box and at practically no cost. Where else could a ham have so much fun for such a small investment in money and effort? When anyone doubts these words, W6CG suggests that they compare the cost, of going on SSB, for instance, to the cost of equipping themselves for RTTY.

If a ham finds that he is beginning to have a jaded appetite for the same old day-in and day-out routine of haming, Carl suggests, and I second the motion, that a fling at RTTY will be a quick way to renew that old enthusiasm.

73, Byron, W2JTP

Surplus [*from page 68*]

Dear Don: Do you have any information on the following transmitter and power supply? Type 50M Radio Telegraph Transmitter, ser. #283 order #5012 Phil-44 Technical Radio Co., San Francisco, Calif., USA. Inspection stamp SC 4206 A The power supply carries the same numbers and is 110 volt, 60 cy.

H. M. Steelman, Box 895, Kinston, N. C. would like to find a schematic or manual on a Navy RBH-2 receiver, Made by National Co.

HARRISON

IS HEADQUARTERS *for* HAMMARLUND

Offering advanced features, well engineered, produced to highest standards of quality, all at amazingly low prices! Here's the best place to get this sparkling new receiving equipment by one of the oldest and best manufacturers.

HQ-110

The newest! Dual conversion on 6, 10, 15, 20 and 40, single on 80 and 160. Crystal oscillator, and calibrator. Q Multiplier. Automatic Auto-response audio system. Top Ham Value! You can be enjoying this FB new receiver while paying only

$17 a month.

(Even less, if your trade-in and down payment is more than $25 and the low carrying cost!)

With control clock, **$10** more. Matching speaker — **$14.95.**

HQ-100

Excellent performance, at lowest price! Covers .54 to 30 MC, with calibrated bandspread of Ham bands. Has Q multiplier, Auto-response, etc. It's yours for only

$12 a month,

with down payment of $25 and low carrying cost.

With control clock, add only **$10.**
Matching speaker — **$14.95.**
Crystal calibrator — **$15.95.**

FOR QUICKEST DELIVERY—

send me your order right now! A deposit of only $5 (returnable any time you say) will start fast action. If you have a trade-in, tell me all about it so I can give you the very highest allowance. Mention the approximate terms you would like, and give employment and credit references.

Prompt, safe shipment to most anywhere in the world, or, you can "Come and get it!" and take it safely home with you.

HQ-150

Here's all the FB features of the famous HQ-140-XA, PLUS Q Multiplier, crystal calibrator, clear-sight S meter, etc. You can get the pleasure of operating it now, while paying only

$22 a month!

(Even less, if down payment and trade-in comes to more than $30 and low carrying cost.)

Matching speaker — **$14.50.**

TRY ONE, and you'll be convinced! It's well worth the **$149** investment. Especially when you can get it for only **$24.92** down, and 12 monthly payments of $11, which includes all carrying cost.

HC-10

Want to turn your present receiver into the sharpest, slickest, SSB/CW/AM/MCW job, one which can hold its own with the very best of them? Just plug this new HC-10 Converter into the 450 to 500 KC IF output tube socket, and connect your speaker!

It has T-slot filter, vernier passband tuning, noise limiter/squelch, linear product detector, stable BFO, adjustable decay AVC, IF amplifier, internal power supply, etc. to add every modern feature to your receiver. Uses 10 tubes.

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because here, in the World's largest trading center, you can get more for your money. Our tremendous volume gives you the benefit of truly lowest overhead per transaction. You get the greatest values, the latest improved equipment, the lowest prices, the easiest terms, the "hottest" trade-in deals, all with the friendliest personal and helpful Service.

Hurry on in! With the new highways, it really isn't much of a drive, from even Maine, Ohio, or Virginia! Easy parking. Bring along your old gear, for my tip-top allowance. I guarantee you'll go home delighted.

73, Bil Harrison, W2AVA

From South and West: Thru New Jersey, leave Holland Tunnel in "Downtown" exit lane, continue straight down for 12 blocks.

From North: Thruway exit 7, Saw Mill River Parkway, (or George Washington Bridge), down Henry Hudson Parkway and West Side Highway. Exit at Chambers St., left on Chambers 3 blocks to West Broadway, right 4 blocks.

From New England: Merritt Parkway, to West Side New York via Henry Hudson and West Side Highways. (See "From North")

From Long Island: Via Brooklyn-Battery Tunnel, right on West St. 9 blocks to Vesey St., right 2 blocks to Greenwich St., left ½ block.

Via Tri-Boro, Queensboro, or Midtown Tunnel: East River (F.D.R.) Drive downtown, and around thru underpass tunnel to Brooklyn Tunnel entrance, but continue straight up West St. 9 blocks to Vesey St., right 2 blocks to Greenwich St., left ½ block.

All New York SUBWAYS can bring you to Ham Headquarters, U.S.A.! —

IRT, Lexington Ave. Express to Fulton Street station, up Broadway to Barclay St., left 2 blocks.

IRT, 7th Ave. Express to Chambers Street station, down West Broadway 4 blocks.

IND: Take A, AA, CC, or D train to Hudson Terminal (Chambers St.), one block west on Barclay St.

BMT 4th Ave. line to City Hall Station, walk two blocks west on Barclay St.

It's even easy by TRAIN!—
Penn Station: Take IRT Subway Express downtown 2 stops to Chambers St.

Grand Central Station: Take IRT Express downtown 3 stops to Fulton St.

Hudson Terminal: Fulton St. exit, left 1 block to Greenwich St., right 1½ blocks.

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is the greatest! Come, pick **your** choice from the hundreds of like-new trade-ins, all money-saving bargain price tagged! Easy terms, trades.

For further information, check number 27 on page 126.

Dave Vise, KN8DDM, 7550 Hanover, Apt. 306, Detroit 6, Mich. would like a schematic or information on a BC-620.

Frank Duffy, W8IWK, 85 Manor Road, Birmingham, Mich. would like to find data on a Bendix TA-12G aircraft transmitter.

William Theriault, 22 Beacon Street, Fitchburg, Mass. would like information on a BC-AR-429 surplus receiver.

Ron Jordan 2322 So. Emporia, Wichita, Kansas would like to obtain info on the BC-624C (rcvr of SCR-522).

Tom Muller, W8GWL, would like information on a manual for the TS-16 audio oscillator.

Leroy May, W5AJG, 9428 Hobart St., Dallas 18, Texas would like information on converting the AXT-2 to 420 mc ham television. He says that the 8025 are stubborn to raise above 400 mc and still maintain power output.

Cornelius Ward, 3467 East 123 St., Cleveland 20, Ohio would also like information on the Bendix TA-12-c aircraft transmitter.

T. F. X. Carroll, KN2UEC, 287 Avenue C., N.Y. 9, N. Y. would like information or a manual on the TS-182/UP VHF checker with scope display.

W1LSR, Charles L. Stephens, 14 Union St., Randolph, Mass. would like information on the R4/ARR2 UHF receiver.

WN7INP, 1007 E. Northview Avenue, Phoenix, Arizona would like information on the surplus GF-11. *Seems to me there was an article in CQ awhile back Bob.*

Chuck Larnard, 234 Lyman Bldg., Muskegon, Mich. built the Novice Q5'er but missed the correction on the schematic. He writes:

I find the 365 mmf variable to be very critical and sharp as far as tuning is concerned and have difficulty in getting on the correct band. There are several points where signals come in. *Sorry to louse you up Chuck. Capacitor C8 should be 50 mmfd and not .005 mf. Also, delete capacitor C6. That will fix your trouble. For a schematic on your Command Set receiver, obtain a copy of CQ's "Command Sets"*

That does it for this month, I can see the top of the table again! 73s, Don, W6TNS

[*from page 16*]

Some weeks later it looked as though the goal was within sight. The fund was rapidly reaching the sum necessary, though, of course, the kids were going without shoes, and the telephone company was threatening to remove the fone. The XYL was in there fighting all the way. You can imagine, then, the sorrow with which she had to tell me I couldn't after all have the Gonset. It just wasn't like my XYL to say anything like that. She was right, though, as we were expecting a new little Novice the end of November, and the price of the set was about what the doctor was charging.

This, needless to say, upset the XYL no end. But true to form, upon arriving home today she had the solution. I say it was a stroke of genius. What is it? Well, of course, it's simple, come the last of November, if the new little Novice should be a boy, the XYL has promised to name him GONSET.

Edward "Ed" Hayden, K2TFV, Bayside, N. Y.

[*turn to page 98*]

You're money ahead with *universal*

3 RELAY BARGAINS!

MINIATURE LATCHING RELAY

Manufactured by Advance. 115 AC. 3 PDT platinum contact rated at 1.5 A.
EXCELLENT UN-USED **$2.95** Ea. or 2 for **$5.00**
BRAND NEW. **$3.33** ea. or 3 for..... **$9.00**

SENSITIVE SPDT RELAY

Mounted on small metal sub-chassis. Sigma 10,000 ohm. Complete with small choke capacitors, resistors, bi-metal adjustable thermo-switch and neon lamp. 5x2x1½".

Excellent, used. Each..... **$2.19**
SAVE by buying 2 for only..... **$3.97!**

6-VOLT STARTING RELAY

Used on PE-103. New cond. Each..... **$1.47**
UNIVERSAL gives you 2 for only..... **$2.79**

G.E. VACUUM CAPACITORS

100 mmfd @ 5 kilovolts. NEW..... **$1.49**
50 mmfd @ 5 kilovolts. NEW..... **.98**

PRECISION WIRE WOUND RESISTOR ASS'T.

¼, ½, 1 and 2 W. 1% or better.
NEW, UN-USED STANDARD VALUES ..10 for **$3.95**
NEW, UN-USED NON-STANDARD .....10 for **2.49**

SOUND POWERED TELEPHONE HANDSET

No batteries! No power supply! Operates over 2 wires or single wire ground return circuit. Will transmit clear, noise-free speech, at distances up to 25 miles when used with 16# twisted pair of wires. UP TO 12 UNITS MAY BE INCORPORATED IN ANY ONE CIRCUIT! These handsets are the latest types available—not obsolete gear. Limited quantity. Brand new and guaranteed.

CLEARING AT ONLY.....ea. **$9.95**

TIMER MOTOR

115 VAC, 60 cycle, heavy duty. 1 RPM. Gear train permanently sealed in oil, which virtually eliminates wear and noise. Has geared shaft for power take-off. Used, excelent.

Each..... **$1.29**

SAVE WITH UNIVERSAL! 3 for **$2.85**

MINIATURE VTVM OR PRE-AMP TRANSFORMER

115 V. 60 cycle to 115 V. & 20 ma. PLUS:
6.3 V. @ .6 amp. New. each only..... **$1.59**
Be wise! Economize! Get 2 for **$2.75**

POWER TRANSFORMER

115 V. 60 cycle input. Output: 300-0-300 @ 150 ma; 5 V. @ 3 amp; 6.3 V. @ 4 amp. SPECIAL!
if you want a buy, here 'tis! .....ea. **$2.95**

FILTER CHOKES! NEW! BOXED!

10 H. @ 200 ma.....**$.98** 12 H. @ 150 ma.....**$.98**
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ANY 2.....**$1.75** ANY 3..... **$2.49**

SAVE MORE MONEY ON METERS! ALL NEW!

3" Rd. 0-20 AC Amps. Direct reading.....**$5.95**
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3" Round. 0-15 VDC **3.95**
2" Round. 0-25 ma. DC **2.95**
2" Round. 0-25 ma. Basic movement but with 0-25, 0-100 and 0-200 ma scale. Resistance equals 4 ohms. Each **2.95**
2" AIRCRAFT TYPE. 0-240 amps DC. With shunt Luminous dial. A beauty! Only .. **3.95**

SPECIAL WHILE THEY LAST!

2" Round. Hermetically sealed. 0-1 ma.... **3.95**

SUPER SALE ON SELSYNS!

HEAVY DUTY. 115 VAC 60 cycle Excel. Per Pair **$14.95**
G.E. SELSYNS. Type 2J1G1 with dope for use on 115 VAC 60 cycle operation. New in sealed cans. 2 (TWO) FOR ONLY..... **4.95**

INTERFERENCE AND HASH FILTERS

7 KW transmitter line filter. 250 V. AC @ 30 amps. New, boxed..... **$7.95**
SPRAGUE Highpass filter 20 amps @ 500 VDC. New. Each **59c** 10 for..... **$5.00**

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Size: 15" deep, 21¾" wide and 10½" high Black. wrinkle hinged top, chrome trim, snap lock. This is a $14.95 value that takes a 19 x 8¾" standard panel. Brand new. Boxed only..... **$7.95**
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For further information, check number 29 on page 126.

[*from page 96*]

Dear Ed.

How can you keep all us young ten meter bachelors drooling away, believing that such a creature actually exists? If I were so naïve to believe her name really is Julie, I'd be glad that I mooch CQ from a fellow ham and would have the money saved to buy the lastest call book and look up any sweet young thing with that handle.

Do you want to double the number of pages of CQ every month? Do you think it is actually possible to combine the world's two most interesting subjects in one magazine? Can you tell me where I can buy a receiver that can tune in real live ELIGIBLE YLs?

Brendan J. Welch W1LPG
Springfield, Mass.

Dear Sir:

Here is the schedule of guest speakers who will address the *HEADQUARTERS USAF EASTERN TECHNICAL NET* during the month of September 1957.

Sept. 8—Mr. Robert I. Colin, of Federal Telecommunication Laboratories. Subject: "TACAN, Aerial Navigation."
" 15—Mr. James Douglas, of Yale University. Subject: "Venus Calling."
" 22—Rear Admiral Rawson Bennett, Chief of Naval Research. Subject: "What Research Has Done For Electronics."
" 29—Mr. Harry Wallace, of Interference Associates. Subject: "Radio Interference Reduction and Measurements."

Net time is Sunday at 2 P.M. E.D.T., on 3295 kc and 7540 kc. J. Harvey McCoy is Net Director.

Earl Henson, AF3ZNF, Secretary.
Camden, Delaware

Contest [*from page 18*]

6. Regulations:

Each log must contain at least one Peruvian contact and also show a minimum of 20 QSO's before it can be considered for an award.

Send all logs within 20 days to,

The Radio Club Peruano,
Casilla 538,
Lima, Peru.

MARC VE/W

The Montreal Amateur Radio Club is again sponsoring this popular across the border party. W/Ks will exchange progressive numbers with as many VEs in as many provinces and territories as possible. Our VE friends will be looking for W/Ks in as many ARRL sections as possible. Send your logs to Gordy Webster, VE2BB, Contest Chairman, 69 Pine Beach Blvd., Dorval, Quebec, Canada.

LABRE

See August issue for dates, times and rules.

W. I. A. VK/ZL

See July issue for dates, times and new rules.

CQ W. W. DX

See August issue for complete details and sample logs.

Copies of Zone and Country list and log and report forms are available from CQ magazine. Send a self-addressed, stamped envelope, or in the case of overseas stations, IRC postage. Make sure to include sufficient postage and state how many sheets are needed. Allow 52

contacts per sheet.

Following a few ZL scores left out in the VK/ZL contest results last month. Leaders in their respective districts.

ZL — CW		ZL — Phone	
ZL1AH	5518	ZL1MQ	1508
ZL2GS	3577	ZL2AJB	1734
ZL3HI	2088		
ZL4CK	2557		

That's all for this month fellows. Start getting your rigs ready and your tonsils in shape for the "big party" come next month. Good luck.

73, Frank, W1WY

South Dakota

The Huron Amateur Radio Club is sponsoring the South Dakota State Amateur Radio Convention to be held September 21 and 22 in Huron. Talks and demonstrations in the fields of transistors, single side band and VHF communications. Other strictly-ham activities will include a hidden transmitter hunt and mobile-judging. Special ladies activities will be featured. The preregistration fee of $6.00 and the at-the-door registration fee of $6.50 includes tickets for a 'Chuck Wagon' feed on Saturday evening and the Sunday afternoon banquet. The club will be glad to handle hotel and motel reservations. For full program and details, write Huron Amateur Radio Club, Box 1234, Huron, South Dakota.

RTTY [*from page 63*]

Ramsey, VK4AB who spent several months in the USA asked me to express his deep appreciation to all his many friends in this country who helped him enjoy his stay here. VK4-AB invites any W Ham who intends to visit Australia to make his home with Ramsey.

OZ3EA, Peter played host to Uncle Dave, W2AFP and to W6ITA. Peter is building a new linear similar to G2MA's.

G3AUB spent his holiday in Southern Switzerland, and visited with I1LOV, Augusto.

We are advised by Bob, OD5BZ that all OD5 Ham tickets were cancelled recently. We sincerely hope if true that it will only be for a short period. We will miss OD5BZ's fine signal.

Where are all of the photographs which were promised during the past six months? We want to show as many pictures of the SB stations and operators as we can. Don't be bashfull. It was very gratifying to receive so many letters of disappointment in not seeing the SB column in the July issue. The success of this column depends directly upon my receiving news and information of interest to the readers, so please send in any news you have or hear about.

73, Bob Adams, W3SW

Modulator [*from page 41*]

secondary taps in series with the high voltage to the final, and you're ready to go!

A few additional notes may prove useful. The method by which the author connects the output of the modulator to the transmitter is by means of an octal plug and socket. It will also be necessary to provide some means of shorting the modulation transformer secondary and removing high voltage from the transformer primary when c-w operation is contemplated. A means for doing this is shown in *Figure 2*.

The results obtained with the modulator are very good. The reports received over the air are indeed gratifying. After listening to recordings made over the air by other amateurs I am fully convinced that the modulator fulfills the needs of the new General class ham.

This article has been written in self-defense. I have received many requests, both over the air and by mail, asking me for details on the modulator. I have done my best to answer these requests, but I hope that this article will shed some more light on the construction of the unit and that it will also provide the newer hams with a means by which they can easily "get on 'fone' "!

In conclusion, I would like to thank Gene Seymour, W7YCU, for his help in testing the modulator, by building an identical unit and helping me run over-the-air checks with both units. My thanks also to L. S. Fisher, KØAWC for taking the photos. ■

VHF [*from page 87*]

Glendale, Arizona More information concerning the same operation as mentioned earlier in this column to be sponsored by the Phoenix VHF Club. This time the news is from Fred Bonavita (W7JLX).

"Just a few short lines from Arizona to advise you and the East Coast mob of the forthing-coming VHF operation sponsored by the Phoenix VHF Club."

"Operation will be on six, two and four-twenty. As far as we know now, equipment will read something like this: on six meters we will have a rig in the 100 watt class for either c.w. or phone; on two meters we will have about 800 watts, c.w. or f.m. This rig is going to be operated by the Fenwick Triplets, W7VNP, W7VNQ, and W7VNR. The four-twenty rig is not all lined up but we have high hopes."

"Present dates are from August 30 to September 3rd, with operation beginning as soon as possible. A twenty-four hour watch will be kept on all bands in all directions."

"In addition to the Fenwicks, there will be W7QNO, W7AGG, W7AOU, W7OSM and several others. Anyone wishing additional information may write W7QNO or myself. Oh yes, the San Francisco Peaks are 12,500 feet high." *Looks like you Phoenix boys are really going "all-out" this time Fred. Hope you make history and that maybe we can even be a part of it.*

Houston, Texas Jim Flowers (W5GHL) gives us information on another certificate from Texas.

"I am writing to you in regard to the new certificate

that Jim Keller, W5ID; Jim Alexander, W5UVF; and myself have gotten up down here in Houston. The certificate is called the W T H J (Worked Three Houston Jim's) and we will give one to anyone who can qualify."

"To get the certificate the applicant must have worked each of us on 50 mc. at least once, that's all. He must then write to me at 4910 Winnetka Drive, Houston, Texas, and I will send him a certificate post-haste."

"We have about twenty of these certificates out at present but we would like to have many more so we would appreciate it very much if you could print a picture in one of your issues. We're sure there are many fellows who could qualify but just don't know that the certificate exists." *Always glad to plug certificates, we just love 'em.*

Buenos Aires, Argentina From one of the DX countries via Alfredo (LU3EX) comes the following:

"I have not been very active lately on 14 or 20 mcs, cw or phone, but during last summer (October 1956-May 1957) I was always on six meters, and sure we made dx on 50 mcs as never before. During these months I worked nineteen countries and CT3AE crossband 10/6. The six meter band has now been closed to dx since the 10th of May when I heard XE1GE, Jeff, for the last time. But this afternoon (July 7) at 2030 GMT the band opened again for the first time with PY6FI. Operation on six was always on phone, with only a few exceptions. I need only Europe and Africa for WAC on 50 mcs. I'm sure we'll make these two continents either this year or next." *Congratulations Alfredo and best of luck on your WAC on six meters.*

Bedford, Indiana Kenny Kern (K9BEH) sends some dope from his home state:

"Here I is writing u'all again and here is a little info from the Hoosier Hills. Have a net on six meters going here, about eight or ten check in every Monday and Friday at 1830. We got fifteen states and a VP7 since November. We hang out around 50.55."

"I guess you've gotten the news about the boys around Indianapolis but just in case you didn't; W9PCL worked Alaska and K9GGF worked Africa. So much for that stuff." *Wish I'd a ben there.*

"Do you know of anyone wanting to buy an NC300 receiver, NC300-2 and 6 meter converter, cabinet and speaker, crystal calibrater, $400.00, also Johnson Ranger factory wired, factory installed grid block keying and a Viking 6n2, $400.00. Would take a good No. II six meter Gonset in trade (4 crystalpos. if possible). *Take note you fellows in the market for equipment. Kenny is ready.*

Toronto, Ontario, Canada From one of our good neighbors Albert Jensen (Ve3DUU) we get the following:

"Two meter activity has been about nil here in Ontario for the last year or so during the week, so something had to be done about it."

"A few of us got together and decided to try a meeting on Wednesday night at nine for a ragchew. So VE3BOW, DUU, BHZ, DAA, AIB, AEZ started out and met fair cooperation, but it was slow."

"At the last Oakville Hamfest it was decided to give a cup to the Amateur with most contacts obtained between any two contests starting January 13, 1957 to next contest ARRL or CQ. The cup was sponsored by VE3-DNK, BHZ and DUU. We took the first letters of each handle and named the A.B.A. Trophy. Man, oh man, that sure did it, up to now BHZ has 248 contacts, Duu has 245, BOW has 143 contacts and VE3's AEZ, AIB, DAA are not far behind. New calls are heard on the two meter band here in Ontario all the time."

"To top it all, the two meter O.T.M.N. which operates every Tuesday night on the frequency 145.06 has been very active. 2100 hours is roll call for traffic and then ragchewing for about an hour. O.T.M.N. stands for Ontario Two Meter Net, not old tired mens net." *Thanks for the information, Albert. Glad to know there is such good activity in Ontario.*

73, Sam, W1FZJ

erator had plugged along asthmatically and quit cold several times during the day. This was due primarily to water in the gasoline. When their own gas supply was exhausted, they had to forage the town for more. On these excursions they had to take along a deputy sheriff to avoid being shot for looting. It got to be a personal battle, Ham vs. generator. They kept it running by alternating kicks and curses with cleaning and cranking. At every such failure both stations were off the air . . . they had no spare. Requests were sent out frequently to various sources for another generator. In Port Arthur, W5AWZ personally promoted a generator and got it aboard an Army "Duck" headed for Cameron. It arrived late Saturday night and was kept in reserve. The original generator, now beaten into submission, managed to keep going fairly reliably.

In the interest of haste and portability, no spare parts were taken to Cameron. Mike sent out a call for spare tubes via the Air Force in Shreveport. They arrived promptly by helicopter. The equipment, running hot enough to fry the proverbial eggs for three days, experienced no major breakdowns. On Friday night the stations were operated under the light of a kerosene lamp until Jim managed to fall heir to a fluorescent lamp which added to the load on the laboring generator but relieved some of the eye strain.

There had to be an "other end" to the emergency circuits, and at Lake Charles CD headquarters, K5JQC was operating on 3850 kc. Contact could not always be maintained with this station and other Lake Charles amateurs, particularly Forest Gaspard, W5BWZ, handled much of this traffic. "Doc" Hawthorne, K5CXB, and Arden Clinger, W5CCD, also did yeoman service, often with emergency power. When the skip lengthened, out of town stations stepped in to relay traffic. Helping on 3850 kc was W5OPJ of Port Arthur whose powerful signal helped keep the channel clear, W5AWZ of Port Arthur, W5EXK in Orange, and dozens of others. Many of the records were lost when the wind whipped log sheets and message blanks through the court house windows into the mud below. The 40 meter link worked a wider radius and again many stations took traffic; W5ZHR, San Antonio, K5DFD, Long Beach, Miss., and W5BCZ in Little Rock to mention a few. Apart from the many stations who helped or tried to help the Cameron operators, there were the careless and thoughtless ones who tuned up without listening or carried on QSO's on the emergency frequencies. On Friday night the QRM reached intolerable proportions and a message was sent to the FCC for help. The following morning 3850 and 7256 kc, plus and minus 5 kc, were declared emergency channels and the situation eased up somewhat.

The volume of traffic remained very heavy with welfare traffic squeezed in whenever possible. The earlier confusion was evolving into some sort of system by late Saturday. With Henry a relief operator, Jim managed to find a few minutes and a little water to sponge off. As he put it, "I didn't do myself any favors, I just removed my natural protection from the rest of the smells." On Sunday another amateur station arrived from New Orleans in the person of W5KSI. Angelo was plagued by troubles in his VFO, and spare parts were sent from Lake Charles. He managed to get into operations Sunday afternoon despite difficulties.

Jim and Henry left Cameron about 2:00 PM Sunday to arrange the return to Lake Charles. By 8:00 PM Sunday the military authorities had established their own communications and the Hams' work was done. About 6:00 PM Mike began to dismantle the Lake Charles stations while Neal worked with Angelo to keep messages going out. Jim, accompanied by "Mac" K5BTG, drove back to Cameron in the family car to pick up the boys and the gear. The antennas were lowered and the equipment lugged downstairs and out to the car. The heavy gear was packed in the front seat, the back seat, the trunk, and on the floor. Mike squeezed into a niche left in the rear seat, while Jim, Neal, and Mac got in the front. They were unable to take the generator with them and it was signed into the care of the CD authorities.

It was still light enough when they left to see more evidence of the hurricane's devastation. All along the road from Cameron to Creole were cars which had been caught during the evacuation attempts and swept as much as 250 yards into the fields. The wind and water had washed out large sections of road. Driving along they saw a TV set apparently intact, although there was no house for miles in either direction. The main bridge across the Inter-Coastal Canal, halfway between Lake Charles and Cameron, had been repaired by Saturday morning. A pontoon bridge spanning the canal further down was still intact but floating six feet above the road level due to the high water. The road bed through this marshy territory is constructed on raised mounds and was the only really dry land for miles. Jim remarked "All this place is good for now is one big natural refuge for ducks."

Like many others doing disaster relief work, the boys had worked themselves into a state of utter exhaustion. Mike had been plagued with stomach trouble besides and Neal came home with a nasty ear infection . . . souvenirs of their weekend by the sea. Some other souvenirs that remain are the messages written on the official stationery of Sheriff O. B. Carter. These are highly prized because this man has earned the respect and admiration of all who saw or heard of his work and leadership

[*Continued on page 104*]

ARC-5/R28 RECEIVER 2-meter Superhet, 100 to 156 Mc in 4 crystal channels. Complete with 10 tubes. BRAND NEW **$18.95**

110 V AC power supply kit $9.75

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BC-457 TRANSMITTER—4-5.3 Mc, complete with all tubes and crystal. BRAND NEW **$7.88**

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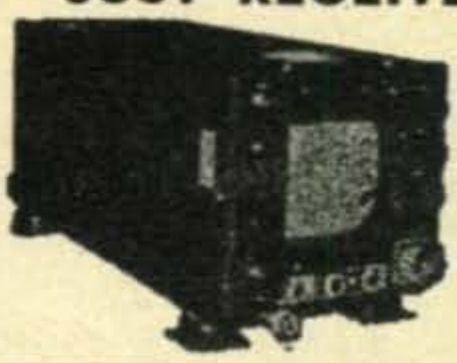

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826	.44			6AG5	.35		
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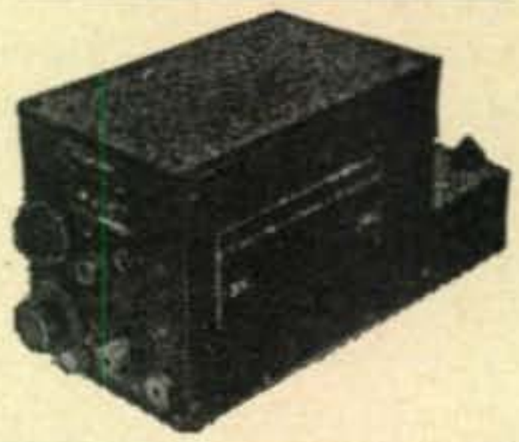

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For further information, check number 35 on page 126.

[*Continued from page 102*]

through those hectic days.

It may seem odd that these two stations provided virtually the only means of communications to Lake Charles from the disaster area. There is a large oil and chemical industry here and the company cars are equipped with two-way radios. Cameron itself has many radio equipped fishing boats and other ships, including the Coast Guard, could and did come in from other areas. Local and State Police mobile units were active. Why then were amateurs called on to supply the vital communications with the seeming abundance of equipment? This is the reason why in Cameron. The boat radios could work marine operators whose outlet was by telephone, but all telephones were out over a wide area. The police and industrial units either could not get into Cemeron when the roads washed out, or were on VHF and could not work reliably over the 40 odd mile path into Lake Charles. That left amateur radio on the fairly low frequencies as the only link during those three days.

A week has passed since Jim, Mike, Neal, and Henry completed their work in Cameron. Now rested and refreshed they have been able to review their experiences objectively. There were lessons learned on that "Field Day" in Cameron. They were learned "the hard way" and they should be passed on to the Ham fraternity in general. The one thing that stands out foremost is the fallacy of depending too heavil yon auto "Mobile" installations for emergency communications. Cars can be immobilized by the very nature of the disaster, as happened here. Small, light weight portable equipment (the surplus gear used at Cameron is anything but light weight!) that can be moved by car, boat, aircraft, or when the chips are down, on a human back, is most desirable. Two small generators instead of one large one would have contributed to portability as well as preventing complete shutdowns for every failure. Supplies of paper and pencils should be included in generous quantities. Stations both in the disaster area and the main base outside should arrange to have someone with authority stand by. By authority, a city, county, state police, local government official, or CD official is meant. This person should be able to take the responsibility for establishing priority of messages and seeing that incoming traffic is properly routed and expedited. Much needless delay and confusion can be avoided if this is done. It also helps to have someone familiar with the area and possible addressees assigned to do the running.

The low frequency bands, especially 80 and 160, seem most logical for situations such as occurred in Cameron. To work beyond the "line of sight" may be necessary. The higher frequency bands, 40 meters and up, may skip beyond the required distance and are vulnerable to long range QRM . . . no small problem as the Cameron operators found out. They feel that 160 meters (outlawed in Louisiana) would have been ideal for day to night ranges of 40 to 100 miles and would have eliminated much of the countrywide QRM. Unless you can count on small, compact disasters instead of floods, blizzards, or hurricanes, look to your low frequency gear.

Loss of parts of the log, the large number of participants, and the blunted memories of three exhausted Hams, make it impossible to acknowledge, personally, all the stations who helped. Hundreds of stations handled the tremendous volume of Audrey's traffic. Requests for aid and welfare messages to worried friends and relatives were sent all over the country and abroad. Many operated under emergency conditions themselves without regular antennas or commercial power. The Cameron operators wish to express their profound thanks to all of you who assisted them. ■

that they became the new country of Ghana (That nearly happened to us with MI3AB/ET2AB but we missed by 3 minutes. This was only a prefix change and not a country change).

NOTES FROM SAIGON, VIET-NAM

Just returned from my second visit to VS1-land where I worked W4CEN, W3JNN and W3GHD from W3ZA/VS1HC. Also visited VS1EW. Am still optismistic about getting on the air from here but it is going to be longer than I thought. Looks like we are going to have to get them some D/F equipment first! Heard the following on the 75A-4: June 3rd: W1ME, W3GHD, W5JRV, W8PQQ, KP4DP, W8DUA. June 4th: W3CRA, KV4AA, W8PQQ, CR8BB (A3 14100 1645 GMT) Ed: Understand that CR8BB runs only a few watts mobile only. June 7th: HH2LD, AP2Q, VU2KM, VU2DR. June 9th: SSB W3HN, W3EDA, KL7AIR, W3KXU, W6JFW, DL4BU. There is a slight possibility that I will make a rush trip to NYC in Mid-July. 73, Rundy

Addresses

CN8GL—Sam, MCB-7, DET "KILO," FPO, N.Y.
DL4BH—Kaufbeuren Amateur Radio Club, 7331st TT GP MAP, APO 191, PM, N.Y.
EL2O—(SM4GL) Gunnar, Box 69, Monrovia, Liberia.
FO8AQ—Raymond, Natua Uturoa Island of Raiatea, Via Tahiti.
FB8CD—Andra Leinart, Anjouan, Domaine de Patsy, Comoro Islands (Via Madagascar).
HS1B—A. L. Williams, Box 1038, Bangkok, Thailand.
K6ZPE—ex-DL4BJ, Jerry, 3447 Aridilla Ave, Baldwin Park, Calif.
KC4US—Antarctic Stations—USN MCB Special, Davisville, R.I. (Mail leaves in Oct.)
KL7BUZ—Dave, 5040th Base Comm Sqdn Det 1, APO 942, Seattle, Wash.
KP4AIO—ex-VP9BM, Jules Wenglare, Box 120, Ramey AFB, Puerto Rico.
KV4BU—(Mrs) Bodil Miller, Box 588, Christiansted, St. Croix, Virgin Is.
KZ5RF—Capt. Rod F. Meaney, Signal (7461) Fort Clayton, Canal Zone.
LA2JE/P—Odd, Weather Stn. Hopen Island, Norway, or via NRRL.
MP4BCE—Via W4GNC.
PX1FC—Via UBA, Box 634, Brussels, Belgium.
PY8HJ—Silvio, Box 174, Manaus, Amazonas, Brazil.
SP8HX—Roman, Box 424, Lodz, Poland.
VK7KM/VK9—Via VK7KM.
VP2VB—Danny Weil, British Virgin Islands, Via KV4AA
VR4JB—Joe, Box 49, Honiara, Guadalcanal, Solomon Is.
VS4BA—R.A. Hawkins, c/o GPO, Simanogang, Sarawak. Via Singapore.
W2BYN—(New) Ben Christie, 265 Brooksite Dr., Smithtown, L.I., N.Y.
W4NBV—(New) Carl Smith, 4305 Landon Dr., Knoxville, Tenn.
W9DZY/6—Dave Muir, 1645 Amberwood Dr., South Pasadena, Calif.
XE3AF—Ravey, Box 918, Merida, Yucatan, Mexico.
XW8AG—M. Maspimby Renuf, MMF/GRL, Detachment FM, Vientiane, Laos. (or Via REF).
YI2RP—Roger, Box 6905, Basra, Iraq.
ZD1NWW—Box 66, Freetown, Sierra Leone.
ZD4BX—Jim Smart, Box 767, Kumasi, Ghana.
ZD4CB—Ricky Palmer, Box 81, Takoradi, Ghana.
ZK2AB—Via W6ZEN, 395 Corsicana Dr., Oxnard, Calif.
ZK2AD—Via W6ZVQ, Bob Miller, 7137 Boulevard Dr., La Mesa, Calif.

[*Continued on page 109*]

Attention Ham Distributors

We are planning a special promotion of ham distributors for our behemoth colossal gigantic November Annual Issue of CQ. Through some ghastly error in the keeping of our records we may not have your company name in our files . . . you'll correct that for us won't you? If your company is not listed below and you are interested in having your company listed on our distributor guide come Colossal November, then drop us a note. Quick!

A. C. Radio Supply
A. & J. Distributing Co.
Ack Radio Supply Co.
Acme Electronics Distributors
Acme Electronics Inc.
Adirondack Radio Supply
Aikens Electronic Supplies, Inc.
Aimar Associated
Algeradio Electronics Co.
Allen & Hurley
Allied Radio
Allied Eletronics, Inc.
Almo Radio Company
Apha Aracon
Amateur Headquarters & Supply
Amateur Radio Equipment Co.
Amateur Radio Supply Co.
Amateur Supply Co.
Jack C. Arbuckle—Distributor
Arrow Electronics
Arrow Electronics Inc.
Walter Ashe Radio Company
Associated Electronics Supply
Atronic Corporation
Aviation & Electronics Suppliers, Inc.

George H. Bagley Co.
The Baker & Taylor Co.
George D. Barbey Co., Inc.
Barry Electronics Corp.
Bartell's Marine Radio
C. E. Beckman Company
Bell-Lourim Electronics, Inc.
Benton Electronic Supply Inc.
Henry O. Berman Co., Inc.
Bluff City Distributing Co.
Bob & Jacks Store for Hams
Lew Bonn Company
J. G. Bowman & Company
Brightman Distributing Co.
W. D. Brill Company
Bronx Wholesale Radio
Bruun Radio Shop
Burghardt Radio Supply
Paul O. Burk Co., Inc.
Burstein-Applebee Company
Busacker Electronics Equipment Co.
Bushland Radio Specialties

C. & C. Radio Supply Company
Cameradio
Campbell & Hall, Inc.
Canadian Electrical Supply Co., Ltd.
Canadian Electronics Ltd.
Carson Electronic Lab
Castrup's
Central Radio Parts Co.
Central Radio Supply Co., Inc.
Certified Electronics, Inc.
Channel Radio Supply Co.
Chemcity Electronic Dist.
Chemcity Radio & Electric Co.
Chester Electronic Supply Co.
Chicago Radio Apparatus Co., Inc.
Chief Electronics, Inc.
James W. Clary & Co.
Coast Radio Company
Congress Radio Company
Consolidated Radio Co.
Cosmopolitan Radio Co.
The E. S. Cowie Electric Co.
Crabtree's Wholesale Radio
Craddock's Radio Supply
Cramer Electronics Inc.
The Crawford Radio
Crescent Radio Supply
Curle Radio Supply
Custon Electronic, Inc.

The D & L Electronic Supply Co., Inc.
Dalton-Hege Radio Supply Co.
William Dandreta & Company
Dealers Wholesale Supply
David B. Dean & Company
Delaware Electronics Supply Co., The
DeMambro Radio Supply Co., Inc.
Denison Radio Supply
Diehl Radio & TV Supply
Dixie Radio Supply Co.
Dow Radio, Inc.
M. N. Duffy & Co., Inc.

W. H. Edwards Co., Inc.
El-A-Co.
Electra Distributing Co.
Electric Products Sales Co.
Electronic Center, Inc.
Electronic Distributors, Inc.
Electronic Equipment Co.
Electronic Equip. Distributors
Electronic Equip. & Engineering Co.
Electronic Laboratories & Supply Co.
Electronic Parts Co., Inc.
Electronic Parts Co.
Electronic Supply Corp.
Electronic Wholesalers, Inc.
Electronics, Inc.
Electro Sonic Supply Co., Ltd.
Elliott Electronics
Elmar Electronics Inc.
Emco Electronic Wholesalers
Emerson Radio of Connecticut
Emrich Radio Supply
A. H. Esch & Co., Ltd.
Euclid Radio Parts Corp.
Evans Radio, Inc.

Fargo Radio Service Co.
Farnsworth Radio & TV
Federated Purchaser Corp.
Fistell's Radio & Electric Supply Co.
Fitzpatrick Electric Supply Co.
Fort Orange Radio Distributing Co., Inc.
Fort Wayne Electronics Supply, Inc.
Robert E. Franklin Co.

G. & G. Radio Supply Co.
W. A. Geiger Radio
General Electronics Distributors, Inc.
General Radio Supply Co.
Genesee Radio & Parts Co., Inc.
The J. K. Gill Co.
Goddard Dist., Inc.
Goodenough Radio Supply
Gopher Electronics Co.
Graham Electronics Supply, Inc.
Grand Central Radio, Inc.
Grice Radio and Electronic Supplies
Gulf Coast Electronics
E. J. Gustafson Company

H. & H. Electronic Supply Inc.
H. & R. Supply Co., Inc.
Hagerty Radio Supply
Hall Electric Company
Hallmark Electronic Corp.
Ham n Hi-Fi Inc.
The Hargis Co., Inc.
Hargis-Austins Inc.
Harris Radio Corp.
Harrison Radio Corp.
Harvey Radio Co., Inc.
Hatry Electronic Enterprises
Henry Radio Inc.
Henshaw Radio Supply
Herman Radio Supply Co.
Hershel Radio Co.
Hub Electronics Corp.
Hudson Radio & Television Corp.
Hygrade Radio Ltd.

Industry Services, Inc.
Inland Electronic Supply
Iowa Radio Supply Co.
Island Radio Distributors, Inc.

J. R. S. Distributors
Jersey Electronics Dist. Co.
Johannesen Electric Co., Inc.
Art A. Johnsen Sales
Lou Johnson Co., Inc.

Kar Radio & Electric Co.
Kopelove Electronics Co.
Kenyon Radio Supply Co., Inc.
John G. Kidd & Son, Inc.
Kieruiff Electronics Inc.
Klaus Radio & Electric Co.
Kenex Supply Co.

L. & M. Sales Co.
Lafayette Radio Corp.
Lakeland Radio Supply
Lamp's 'Lectronics Ltd.
Lavender Radio & TV Supply, Inc.
Leader Electronics
Leonard Radio Corp.
Leuck Radio Supply
Lifsey Distributing Co.
Aaron Lippman & Co.
Long Island Radio Co.
Louisiana Radio & Television Distributors, Inc.
W. H. Lowdermilk & Co.
Lowman & Hanford Co.
Lurt Electric Co.
Larry Lynde Electronics

A. C. McClurg & Co.
Mac's Radio Supply
Malone Electronics, Inc.
Maytag Electric Company
Melrose Sales Company
Melville Radio Corp.
Melvin Electronics, Inc.
Meyers Electronics, Inc.
Midway Radio & Television Corp.
Mid-West Associated, Inc.
Miller Research Labs
Milo Radio & Electronics Corp.
Modern Electronics Company
Moore Radio Supply
Morrison's Radio Supply
Murray Radio Company

N. R. M. Wholesale Radio, Inc.
Nelson Radio & Supply Co., Inc.
Newark Electric Company
Niagara-Concord Corp.
Nidisco Jersey City, Inc.
Nidisco Passaic, Inc.
Nodelman News Company
Northwest Electronics, Inc.
Northwest Radio
Northwest Radio & Electronic Supply
Northwest Radio of Michigan
Northwestern Radio Company

O'Loughlin's
Offenbach & Reimus Company
Oil Capitol Electronics Corp.
Olson Radio Warehouse, Inc.
The Overton Electric Company

Pacific Electronics Sales Co.
Park Electronic Corp.
Payette Radio Ltd.
Peerless Radio Distributors, Inc.
Pembleton Laboratories
Peoples Radio & TV Supply Co.
Pioneer Electronic Supply Co.
Pittsfield Radio Co.
Portland Radio Supply Co.
Ports Electronics Parts Co.
Power City Radio Company
Prestwood Electronics Co.
Progress Radio Supply Co.
Purchase Radio Supply

Frank Quement, Inc.

R & R Supply Co., Inc.
Radelco, Inc.
Radio, Inc.
Radio Distributing Company
Radio Electric Service Co., Inc.
Radio Electric Service Co. of Penna. Inc.
Radio & Electronic Parts Corp.
Radio Electronic Sales Co.
Radio Equipment Company
Radio Equipment Company, Inc.
Radio Equipment Corp.
Radio Ham Shack, Inc.
Radiolab
Radio Laboratories
Radio Parts Company
Radio Parts, Inc.
Radio Parts Dist., Co.
Radio Parts of Arizona
Radio Products Sales Inc.
Radio Service & Supply Co., Inc.
Radio Shack Corp.
Radio Specialties Company
Radio Supply, Inc.
Radio & Television Distributing Co.
Radio Trade Supply Co.
Radio Wire Television Inc. of N. J.
Randolph's
Harry Reed Radio & Supply Co.
Reeves Radio Supply
Reno Radio Company
Reynolds Radio Supply
Rio Radio Supply Co.
Robbie's Radio Supply
A. H. Roemer Co., Inc.
Rogers Radio Company
E. A. Ross & Company

S. & S. Radio Supply
Sacramento Amateur Radio & TV Supplies
San Francisco Radio & Supply Co.
Satterfield Electronics, Inc.
H. R. Savard Radio Ltd.
R. G. Sceli & Co., Inc.
Schenectady Electronic Dis. Corp.
M. Schwartz & Son
Scott Radio Supply, Inc.
Seattle Radio Supply Inc.
Selectronic Supplies, Inc.
Shanks & Wright
Siler's Inc.
Smalley's Radio Ltd.
Smith Supply Company
Southern Radio Supply Co.
Southwest Radio Supply
Southwest Wholesale Radio, Inc.
Southworth's
Specialty Distributing Co., Inc.
Springfield Radio Co., Inc.
Srepco, Inc.
Roy C. Stage—Distributor
Stallman Of Ithica, Inc.
Standard Parts Corp.
Standard Supply Company
Stansifer Radio Co.
Harry Stark's Inc.
The Stark Radio Supply Co.
Stechert-Hafner, Inc.
Albert Steinberg & Company
Sterling Radio Products Co.
J. V. Stout Company
Sun Parts Distributors, Ltd.
The Sun Radio Company
Supreme Radio Supply
Swan Distributing Co., Inc.

Taylor, Pearson & Carson
Technology Store
Teleradio Inc.
Teletronic Supply Co.
Television Accessory House, Inc.
Television Radio Supply Co.
Terminal Radio Corporation
Bill Thompson Radio Supply
Tri-City Radio Supply Inc.
Charles E. Tuttle Company
Tydings Company

Uncle George's Radio Ham Shack
United Electronics Wholesale
United Radio & Electronics Co.
United Radio Supply, Inc.
Universal Distributors, Inc.
Universal Radio Supply Co.
Universal Service

Valley Electronic Supply Co.
Valley Engineering Co.
Valley Radio Distributors
Van Sickle Radio Co.
Variety Electric Co., Inc.
Vaughn & Wright
Victory Specialties Co., Inc.

W. & W. Distributing Co.
Waitkus Supply Company
Walder Radio & Appliance Co.
Verl G. Walker Company
Warren Radio Company
Welch Radio Supply
Westchester Electric Supply Co.
Western Distributors Radio & Supply Co.
Western Radio and Television Supply Company
West Texas Radio Supply
Wholesale Radio & Electric Ltd.
Wholesale Radio Parts, Co., Inc.
Wicks Radio Equipment Co.
William Radio Supply Co.
Winteradio, Inc.
Wireless Radio Company
Wise Radio Supply
Wofford Electronics Parts
World Radio Laboratories, Inc.

Yale Radio Electric Company
York Radio & TV Corp.
Young & Young of Lawrence, Mass., Inc.
Yukon Radio Supply Company

Zack Radio Supply Company
Zeitlin & Ver Brugge

X-str c-w Monitor

[*from page 35*]

monitor is not required, the switch may be turned off. This potentiometer was mounted on the back of the receiver through the mounting hole for S-meter adjustment potentiometer. Because the S-meter adjustment is seldom used, it was placed underneath the chassis on an extra mounting bracket.

The crystal diode rectifier is not critical; any good general purpose crystal diode is satisfactory. A 1N60 glass-encased diode was used in this unit. It is important to have the cathode end of the crystal diode toward the emitter so that the emitter voltage will be positive. The tapped transformer for the feedback may be a vertical output transformer or an audio output transformer. A capacitor *(C2)* placed across it is selected so that the audio tone will be varied between 500 and 2000 cycles. The unit oscillates without this capacitor but it provides greater stability and a lower frequency results. This capacitor is selected by cut and try method, a value of .005 μfd. was right for the particular transformer used.

The feedback capacitor is not a critical value but .01 μfd. was found to be quite satisfactory.

The 1300 ohm resistor from the potentiometer to ground is for protection of the transistor. Without it, if the potentiometer was turned all the way to the end, full d.c. voltage would be applied between emitter and base which might possibly damage the transistor.

The Circuit

The circuit is a modified common-emitter Hartley oscillator. The collector is connected through one-half of the transformer to the chassis placing the collector at chassis potential. Necessary feedback signal for operation of the oscillator is developed across the other half of the transformer winding which is connected through capacitor *C1* to the base of the transistor.

The base bias voltage is primarily determined by the size of the base resistor which includes the potentiometer and the 1300 ohm resistor. Bias (measured between base and emitter) equals from 0 to .1 volts depending upon adjustment of the potentiometer tone control.

The frequency of oscillation is determined by many things, the transformer, coupling capacitor, the shunt capacitor *C2*, and the size of the base resistor. Varying any of these factors changes the frequency. They should be adjusted for optimum frequency range controlled by the potentiometer.

In operation the transistor frequency monitor proved to be the most valuable simple addition to the station. The monitor signal after initial adjustment is always pleasant to listen to and is extremely dependable. ■

[*from page 105*]

DX'ploits

Leading off this month is W1FH. Chas. nabbed FB8CD, A3, for No. 276. . . Don, W6AM follows closely by adding ZD4CM for a 275 total and going to 222 on phone with OH2AA/Ø. . . Howy, W2AGW, rose to 270 with ZA2ACB and VR6TC while Dick, KV4AA, also hit 270 with FB8CD (Comoros) . . . Gene, W6EBG, hit 264 thanks to W2HQL/KC4 and ZD4CM as Roger, W3EVW, nabbed OH3AA/Ø for 261. . . Van, W9HUZ, came up with ZD4BQ, ZA2ACB and SVØWE to hit 259 while Russ, W8DAW, sends revised list with 256 tag. . . Luis, CE3AG, goes to 255 with IT1AGA, FW8AA and ZD4CM as Ray, W6BUD, adds 7 to rest on 254. . . HS1A raised the total of Fred, W8KML, to 248 on CW and 225 on phone while Erwin, OE1ER, adds 18 to reach 241. . . Thor, W6LN, sends revised list with 233 total as Dan, W6PH, moves to 219 with FB8XX, VR6TC and OH3TI/Ø. . . A VK6 pasteboard gave Harry, WØANF, WAZ No. 356 while Burney ZS2AT, added 6 to hit 204. . . Norm, W9YNB, sent new list with ten additions for a 202 total as Stan, W1CLX, moved to 262 by adding FB8CD (and removing FW8AA and CR8AA). . . New list puts A1, W2WZ on 262 while Howy, W2QHH, moves to 252 with ZC5AL. . . John, W4HA, ups to 240 on cw and 216 on phone with the addition of 3A2BF, ZD4BQ and I5FL as Ev, KP4KD slid to 223 with VQ6LQ and OH2AA/Ø. . . Paul K2GFQ, keyed with ZK2AD, FL8AB, OH1NA/Ø, ZD4BQ, UH8KAA, ZA2ACB, EAØAC, VP5BH, UJ8KAA and W2HQL/KC4 to reach 223 while Ed, W6UQQ, hit 208 with VP2VG, OH1ST/Ø, ZC5AL, UJ8KAA, ZD4CM, HSIA, CT3AB and 3V8FN. . . Eric, OZ7BG, snagged OH3AA/Ø, VP5BH, OQØDZ, VS4BA and IT1ZZM for 221 as Bob, K2GMO, also hit 221 thanks to ZD9AE, ZK2AD, EAØAC, W7FNK/KP6, SVØWB/Rhodes, ZA2ACB and ZD4BF. . . John, W8PUD, submits revised list moving him from 177 to 205 while Tony, LU5AQ, rises to 203 with help from ZC5AL, BV1US, FL8AB, ZD3A, HL2AJ, YJ1RF, UF6KAF and UJ8KAA. . . Dick, W2PZI, hits 160 with M1H, UD6AL, UJ8AF, KG6AHA, F9QV/FC, FB8BX, W2IWC/KC4 and ZC5AL as Earle, W1RB, goes to 198 with FP8AK/VP2, VR6TC, and 3A2BG. . . Chas, W2AZS, adds zones 17, 30 and 40 plus VS9AP for a 38-179 total while Jim, W4FYI, moves to 165 with such as ET2US, SVØWO, FK8AO, VQ6LQ, ZD3A, VK9AT, FP8AP, UO5AA and JZØPA. . . Dick, W6TKX, keyed with OQ5CP, FM7WT, EA9BK, VS4BA and UO5AA to reach 160 as Sheldon, W5VIR, worked UA9DN for zone 17 and went on to

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QSLs [*from page 43*]

services of a photographic studio. If you are going to print your own cards by the contact method, that is, with a printing frame or contact box, then order a negative that will contain all the information in a 3-7/16 x 5-7/16 inch area—the same size as the postcard. This will require composition on a 5 x 7 inch negative or larger. If you plan to use an enlarger, the negative size is not important as long as it can be handled in your enlarger. If the correct size ratio is used in the initial layout, there should be no difficulty encountered in getting information on the layout to go on the finished card.

If you prefer not to do the printing yourself, for the sake of economy, have the copy made on a 4 x 5 inch negative so you can order double weight contact prints which can be trimmed down to size.

Postcard sensitized paper can be purchased through any photographic store. It may not be carried in stock but it will be ordered for you. Kodak makes only contact paper while Dupont makes a paper for projection. You will need the projection type paper if you use an enlarger. The cost is about $2.80 per box of one hundred. The back of the cards contains a pre-printed place for a message and an address. Other size double weight photographic paper can be used if desired and trimmed to size.

Details for the actual printing of these cards will not be included here. Manuals containing the simple instructions are readily available. Chemicals for the job will cost only a few cents and the kitchen sink makes an ideal place for a temporary darkroom. Plastic, glass, or enameled dishes may be used in the place of regular photographic trays. If contact prints are to be made, a printing frame is a handy aid, however, two pieces of glass cut slightly larger than the negative can be hinged with tape and used instead.

The cards will dry overnight between absorbent cloth or paper. The QSO confirmation can be typed or written on the back of the card if this was not included on the front side. If you send lots of cards, a useful item would be a rubber stamp containing the essential confirmation information. Remember, if the photograph shows your station layout, there is no need to repeat this information in the confirmation.

There is something thrilling about having a card that is all your own. That peanut whistle or the KW that you lovingly call your rig, and the fellow who operates it, are the only kind like them in the world. I am always interested in seeing the other fellow's layout and knowing what kind of face goes with the voice or fist. Photo cards may not take the place of eyeball contacts, but they will run a close second. ■

MOVIE

[*from page 25*]

With 2100 feet of film exposed after several months of work, W3VXN felt the film could be better edited if the sound track was recorded first. W3NIP volunteered to write the script. One of the local radio announcers, Sam Serota, offerred to narrate the film.

Many recordings of on-the-air transmissions between Phil-Mont members were made and then edited into the proper location on the narrative tape. When completely edited the tape recording was transferred to a film sound track. At this point there were 2100 feet of unedited scenes and a 22 minute (800 feet) sound track.

Editing began. Scenes were selected that fit a particular section of the sound track. For instance, when W3MVG was heard putting out an emergency call, Bill had to find scenes of W3MVG which would match the sound track.

The entire film was edited in this manner, making the picture film match the narration film.

We now had two separate films. One roll contained the picture negative and the second roll the sound track negative. A "positive"—combining both films—is required for a finished film. There are several film processing labs around the country that specialize in commercial processing. The lab, by following synchronization marks which Bill set up on the original negative, was able to combine both sound and picture into one positive print . . . ready for viewing. That's all there was to it!

It is not advisable for anyone to take on this type of job without expert assistance as it isn't easy. Even with free labor Phil-Mont's film cost $210 for 22 minutes of running. The cost for black and white movies breaks down roughly this way: $2.50/100 ft. for the raw film; $2.00/100 ft. for developing; $4.00/100 ft. for printing; and $3.00/100 ft. for sound track. Color movies would roughly double the cost.

Was the effort and expense worth all the trouble? Well, the *public* understands it. Women who have been "radio widows" for many years have said it was the first time they really understood what Amateur radio is about. Above all, it has brought Amateur radio nationwide recognition.

Should you or your club wish to see "Every Single Minute," write: W3QQH, Clinton R. Spencer Jr., 124 Central Ave., North Hills, Pa. There is a small charge to cover eventual replacement of the films and mailing.

Special thanks are in order to all those who made the project a success. Especially W3IM for his cartoons; W3NIP for his script; and Sam Serota for his narration. Certainly the Phil-Mont Radio Club cannot thank W3VXN enough for his contribution to the amateur radio fraternity. ■

[*from page 109*]

187 with ZC5AL and UC2AD. . . Larry, W9DFV, made it 117 with OQ5IE and VK7KM/VK9 while Jean, F8CW, hit 180, cw, and 174, phone, with FO8AD, LU3ZS, FY7YC, UR2AM, HS1B, VK9HO, UP2AS, KL7PIV and BV1US. . . Guy, W6DI, went to 239 on phone with FE8AH, I5FL and ZD4CO as DL7BA nabbed FP8AA for No. 211 and reports a total of 189 countries on 21 mc. . . Bill, KØCER, aims for DXCC before returning to college Sept. 1st. He is up to 75 with such as VP8BT, KR6QW, PJ2ME, OHØAW and UB5WF. . . K6AUC is up to 80 with 33 zones while WØDVN hits 81 with HI8BE and SVØWP. . . W8JGU hits 206 with ZD1FG, W4DQA/KS4, FB8ZZ, ZD4CB and BV1US as W2HQL QSO'ed the five watter at VQ6AB. . . Latest at KØDQI is Raem, TF2WBO, CR6FC, EA6AM, HH2OT, UA1DH and KG1AX for a 64 total with 60 watts. Scotty also reports that VO6N's new call is VO2NA. Same QTH. . . Ron, W2SUC, moves to 160 with FE8AH, UR2AO, IS1GF, 3A2BG, VQ2RG, UO5KPM, CR4AH, UD6AI and VK7KM/VK9 while Rick, W9YKJ, hits 104 with UO5AA. . . Joe, W9JUV, ups to 186 with TI9CR, JZØPC, FK8AS, FB8BC and UF6AB as Vince, W2CYS, moves to 223 with such 21 mc stuff as VS4JT, BV1US, FB8BX, CR5SP, YA1AM and UJ8AF. . .

"W-3-0" DM5MM/MM Worked Three Ocean Award

This certificate will be awarded to any licensed amateur who submits proof of contact (QSL's) with the East German training ship "WILHELM PIECK," DL5MM/MM, in three oceans (seas). This voyage was in progress between May and August 1957. Oceans (seas) crossed were: Baltic Sea, North Sea, Atlantic Ocean, Mediterranean Sea and Black Sea (Adriatic Sea?). "W-4-0" or "W-5-0" is available to cover QSO's in the Straits of Dover, Straits of Gilbraltar, Dardanelles, Bosporous or the Marmara Sea. Contact from ZA2ACB will count for Mediterranean (Adriatic) sea etc. Send QSL's to DM Contest Bureau, DM2ABB, P. O Box 185, Schwerin (Meckl.) East Germany with 2 IRC's. Closing date November 1st. SWL's may participate and receive "R-3-0", "R-4-O" awards for reports of DM5MM/MM signals as above.

The following data has been compiled by Hal, W5FFW, and other members of the WEST GULF DX CLUB after many hours of listening and comparing notes, and is intended to be of some help to those seeking contacts and confirmations from Soviet Republics in connection with DXCC, WAZ, and other operating awards.

[*turn to page 123*]

DSB [*from page 56*]

not realized that this was DSB until they were told. Those who did catch on immediately were generally the ones who habitually check sideband suppression of received SSB signals, or else who did not have their receiver set up for optimum rejection of the unwanted sideband, and hence experienced some tuning difficulty.

A surprising number of SSB enthusiasts have expressed genuine interest in DSB operation. An even greater number of AM and cw operators have reacted favorably to this mode of transmission when they saw the ease with which they could hop on the suppressed carrier phone bandwagon. All are quick to realize that the same basic circuitry can be applied to a kilowatt final as well as to the low power unit described in this article.

No article on amateur transmitters is complete without mention of TVI. This balanced modulator has been operating as the driver for the 300 watt linear final on 20, 40, and 75 meters for several months. Contrary to the good practices employed by more ambitious constructors, the DSB unit, as well as the final, is completely unshielded. The station is located in the primary coverage area of two VHF television stations. The only reported case of TVI was apparently caused by overloading the receiver with the transmitted signal, and a high pass filter purchased by the owner of the set in question cured the trouble.

The use of a properly operating linear final goes a long way toward minimizing TVI. Since the amplifier is linear, the harmonic content of the output signal is extremely low. In areas where the signal levels obtained from the television stations are somewhat poorer, all the same precautions are advisable in the construction of DSB equipment as are recommended in any other type of amateur transmitter. This is particularly true of balanced modulators operating at higher power levels (such as the kilowatt final mentioned a few paragraphs earlier). Since these balanced modulators are in the Class C condition of operation when modulation occurs, the usual harmonics will be generated. Shielding and filtering is the only answer in this case.

The time has passed when sheer power is the answer to amateur radio communications problems. Progressive techniques are now required in the competitive atmosphere of our crowded bands. The simple circuit described in this article allows the average experimentally-inclined amateur to try suppressed carrier phone transmission with only a minimum cash outlay.

The author acknowledges the helpful suggestions of W2CRR and K2KID, without whose encouragement this article would surely not have been written. ■

FOR YOUR HAM SHACK

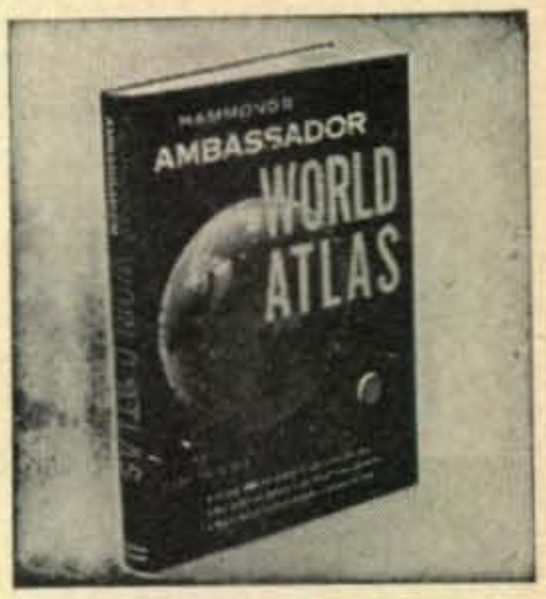
GLOBE

Here it's Friday already . . . what better time to give the XYL this globe for your shack . . . and *you're getting a FREE year of CQ to boot.* Costs $25.00 in the stores . . . only $19.95 on this CQ deal.

ATLAS

Come on, get with it. Don't pull a blank when some one asks you for the capital of Honduras. For only $12.50 you can own 7 lbs. of full-color maps and a complete gazeteer. Send for this Hammond Atlas. PLUS a one year subscription to CQ.

only $12.50



BINDER

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MOBILE HANDBOOK

This new Mobile Handbook by Bill Orr, W6SAI, has been getting raves from all of the experienced mobile operators. There is all sorts of information in here that cannot be found anywhere else. This is NOT a collection of reprints. $2.95 postpaid.

COMMAND SETS

This IS a collection of reprints, containing all of the available information on the conversion of the popular "Command" transmitters and receivers into good ham transmitters and receivers. Invaluable for Novice, Technician, General, Advanced and Extra class operators. 136 fabulous amazing terrific pages for only $1.50 PPD.

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Learning code is a snap with this record. Speeds from 3 to 16 WPM, depending upon turntable speed. This 12" LP record has on it all you need to learn the code for both the Novice and General license. $3.50 each.

C9

CQ Magazine
67 West 44th St.
New York 36, N.Y.

SIRS: My check (money order) for $..... is enclosed. Please send the following items to: ☐ Globe ☐ Atlas ☐ Binder___Year Wanted ☐ Bound Volume___Year Wanted ☐ Mobile Handbook ☐ Command Sets ☐ Ham's Interpreter ☐ Code Record

NAME .....

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CITY .....ZONE .....STATE .....

Listen [*from page 39*]

through New York. Most of the Atlantic passenger liners operate here so it is possible to hear anybody crossing the Atlantic via boat. In the West, this channel is used by the Seattle traffic.

2142—This is Norfolk's working frequency. With one of the larger naval bases at Norfolk, you will hear many servicemen here.

2158—This is Tampa's channel. 75% of the people using this channel are shrimp fishermen, both colored and white. Despite the low power of their transmitters they can be heard as far north as Canada.

2206—This is the frequency, or at least one of them, for working New Orleans. Some fishing boats can be heard here but in the majority are the off-shore oil drilling rigs.

The above is only a guide for the beginner. Many of the above channels are also used in other parts of the country. For example, vessels on the Great Lakes use 2118, 2158 and 2206. Further, there are a number of other channels. After you become accustomed to the band you will soon find which frequencies are the most interesting and the easiest to listen to in your community. ■

Don't look at this.

Instead turn to page 57.

F	A	R	A	D	■	■	M	E	T	E	R
R	I	O	T	■	O	M	■	I	R	M	A
E	M	D	■	S	H	O	W	■	A	I	D
S	S	■	T	I	M	B	E	R	■	T	I
H	■	S	A	T	■	■	B	E	D	■	O
■	A	L	L	■	■	■	■	L	U	G	■
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P	■	E	N	T	■	■	E	Y	E	■	S
R	F	■	T	O	K	E	N	S	■	A	T
O	L	D	■	W	E	L	D	■	E	R	A
V	O	L	T	■	Y	K	■	P	E	E	R
E	P	S	O	M	■	■	S	O	L	A	S

Radio-a-gram

A good operator takes pride in his ability to send perfect code.

W O W

The November issue of CQ will be the first Annual Behemoth Gigantic Colossal Tremendous Oversized Bulky Multipaged issue. We are going all out on this one. We have over 50 feature articles scheduled, and providing the book doesn't fill up completely with advertising we will get all 50 into print.

Articles are being carefully selected to provide a complete picture of the whole of ham radio . . . features will be included of every aspect of our varied hobby. These are not unimportant articles . . . many of the articles are by our top writers . . . W6SAI, W6AJF, W6GEG, W2AAA, W6TNS, W2NSD (?), W6BLZ, W2AEF, etc. and W2ZGU.

This issue will practically be a handbook. It will be the largest issue of CQ ever printed. As a matter of fact, it will contain more articles than any ham magazine has ever printed before.

Here are some of the articles that will be featured:

Phone Patches, switchless circuits, hybrid
Transistorized Power Supply
QSL designing
Grinding Crystals
Selenium rectifier and glow tube tester
Transmitter tuning meter
Repairing HV plate transformers
Filter-Limiter for CW
Novel transmitter tuning system
Special SSB Power Supply
Selective audio filter
PL-172 kilowatt rig (Penta Labs)
Model 26 RTTY and how it works
NC-240 D Modifications by W6SAI
Sideband Filter Choke
220 mc harmonic disposal
Complete KW rig, 4-400A's
Radar Speed Meter info
New Type S-Meter
DSB data, 813 rig described
Real WOW YL article
125 watt modulator
Mobile compressor
Multi-band vertical
Gamma for tri-band beams
DSB amplifiers by W6AJF
How to raise chipmunks in a wet climate
Protecting triode transmitting tubes

AND A WHOLE LOT MORE THAT WE ARE KEEPING UNDER WRAPS

The Colossal November issue will sell for $1.00 on the newsstands, if you can find in on the newsstands. Be shrewd, be subscribed.

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C-9

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For further information, check number 49 on page 126.

The Ham Shop

RATES: 25c per word per insertion for commercial business organizations.
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MINIMUM CHARGE: $1.00.
CLOSING DATE: 20th of the 2nd month preceding date of issue.
MAIL: Your typewritten copy with full remittance should be sent to CQ Magazine, 300 West 43rd St., New York 36, N. Y.
Attention: Classified Ad Dept.
NOTE: The products and services advertised in this section are not guaranteed by the publisher of CQ
Telephone orders not accepted.
Call letters only are undesirable. Please include name and address in all advertisements submitted.

FOR SALE

ATTENTION COMMUNICATOR OWNERS: Illuminated "S" meters that just plug in to attach. No disassembly of communicator required. Also new and used communicators, linear amplifiers, VFO's and all types of mobile gear. Graham Company, W1KTJ, P.O. Box 28, Stoneham, Mass.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallicrafters S38, $29.00; S40A $69.00; SX99 $119.00; SX71 $149.00; SX 100 $229.00; Viking Adventurer $39.00; Viking II $199.00; Ranger $179.00; Valiant, $379; S40B; S85; SW54; NC98; NC183D; NC300; HQ129X; HQ140X; GPR90; A54; AF67; PMR6; PMR7; Collins KWS-1; 75A1; 75A3; 75A4; 32V3; many other items. Easy terms. Write for list. HENRY RADIO, Butler, Mo.

CRYSTALS: FT-243's—3500 to 8700 KC ± 2 KC, $1.00 each. .01% setting, $2.00 each. Hundley Crystal Co., 2951 North 36th, Kansas City 4, Kansas.

FAMOUS VHF "Lunenburg antennas, 6 meter 5 element, $14.95; 2 meter 6 element $6.95. 6 meter horizontally polarized mobile antenna. Wholesale Supply Co., Lunenburg 1, Mass.

COAXIAL CABLE: 53 ohms, 100 feet $3.85 postpaid. Satisfaction guaranteed. Van Dick, Little Falls, N. J.

SALE: VHF Climaster model 62-T-10, 2, 6 and 10 meter transmitter, 200w. A-1 and 160w A-6, 4X150A final, page 135 Nov. QST 1956. Gonset communicator, 2 meter, Eldico electronic key, model EE-2. Tom Moody, W4HJQ, Glendale, Ky.

MULTI-BAND ANTENNA, 80-40-20-15-10. $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Kentucky.

ATTENTION MOBILEERS!! Leece Neville 6 volt 100 amp. system alternator, regulator and rectifier, $45.00 Also Leece Neville 12 volt 100 amp. system, alternator, regulator & rectifier $85.00. Perfect condition. Herbert A. Zimmerman, Jr. 115 Willow St., Brooklyn 1, N. Y., K2PAT, ULster 2-3472.

PRINTED-CIRCUIT material, supplies, instructions. Free catalog. Printed Circuits, P O Box 2582, South Bend 14, Ind.

SURPLUS RECEIVERS, trans, tubes, small parts, new and used. Write for list. D. Reed, 1604 Grange Avenue, Racine, Wis.

MICHIGAN HAMS! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover, Ann Arbor, Michigan. Telephone NOrmandy 8-8696, NOrmandy 8-8262.

PERSONAL HAM SUPPLIES! Pocket printer—name, call, address (ink pad included)—$1.00. 500 miniature labels—name, call, address—$1.00. Lucite desk wedge, name or call, gold on black—$2.75. All postpaid. Santer, 544 East 6th St., New York 9, N.Y.

SAVE! BUY surplus direct from Government at tremendous savings, radio, electronic equipment, parts, power tools, machinery, hundreds others. G'ovt. surplus bulletin, $1.00. Box 169CAF, East Hartford 8, Conn.

GLOBE KING 400A perfect cond. $200. Lettine model 130 same as new with 3 sets coils $120. Elmac AF67 mobile transmitter $120. Want Cesco phone patch, monkey and G66 mobile receiver. Andy Grant, W4YBL, 3513 Statesville Rd., Charlotte 6, N.C.

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3.5 KW power supply. 7000v at 500 ma continuous. Ideal for 4-1000A SSB linear amp. No junk transformers. $175 FOB Los Angeles. Tom Snyder, 1542 Harvard, Santa Monica, Calif.

FOR SALE: S38D like new $30; Heath VFI $18; Knight 10" 1 kit with photo tube, $10; homebrew code oscillator $5, two 807's $1.50; 6LGGA $1.00; 6BEG, $1; power supply 240v/40 mil, 6.3v/2amp, $7; S-19R (Sky Buddy) $15. All FOB. Ed Barres, K9CSX, 24 Parkway, Sullivan, Ill.

FOR SALE: SCR-625F Mine detector, brand new, $50. FOB Minneapolis, Minn., or if desired, Seattle, Wash. T. G. Dalby, 7421 55th Ave., N.E., Seattle 15, Wash.

BC-312-C power supply, 10 and 15 meter crystal controlled converters. Good condition, $60. FOB. Eddy, W6DWQ, Ross, California.

FOR SALE: Johnson Viking II complete with all up-to-date modifications plus push-to-talk, matching VFO and lowpass filter. Selling to go high power on VHF. $250 or best offer. PMR6 mobile receiver, best offer. J. B. Harwell, Jr., W5JWL, Gurdon, Ark.

2000 WATT P. E. P. Linear Final—Johnson breaks price and power barriers with the new Viking Thunderbolt using two 4-400A's, bandswitching with self-contained power in Valiant sized cabinet. 500 Watt Linear—Johnson breaks the cost and size barrier with the new Viking Courier using two 811A's, bandswitching with self-contained power in Ranger sized cabinet. Photos, prices, specifications and your highest trade-in allowances available on request from LADD ELECTRONICS, 111 No. 41st St., Omaha, Nebr.

LM-7FREQUENCY METERS, 190-20,000kc with modulation, used excellent, complete with crystal, tubes, less calibration book $27.50. Voltage regulated power supplies, 115/220v 60cy. input, 200vdc 100ma regulated, 12-15vdc at 4A, 12vac at 1.5A, complete with plugs, cover 10" x 8" x 9" and 6 tubes, $19.95. Coaxial cable RG-11/U, 72 ohm, $6/100ft., $45/1000 ft. Filament transformer 115v 60cy, 5VCT 30A, 2.5kvt $6.95. Eimac 4-1000 tube socket $5.95 Microamp meters 4½" SQ, O-50ua, $12.95, 2½" RD. O-200ua $3.50. 100kc xtal $3.50. TECHNIONICS, INC., 336 Canal St., New York 13, N.Y.

Sell BC-453B (Q5er) with power supply completely converted, $10. O'Brien, W2EQS, Westwood, N. J.

NEW COLLINEAR TYPE VHF beams. Write for information. .051 perforated aluminum sheet, 5/64" OD holes, ⅛" centers, $1.20 sq. ft. RADCLIFF's, Fostoria, Ohio.

COLLINS 75A-4, serial #2759, all modifications, vernier dial, perfect. $530.. Geo Barnes, W8WGA, 3451 Ridge Ave., Dayton 4, Ohio. Phone ORegon 0409.

FOR SALE: Tubes, brand new 813s, $8; 810s, $7.50; 832As, $3.50; 250th, $17.50; 4-250A, $25. 829Bs, $4.50; complete ARC-1, VHF 50 channel xceiver, dynamotor, some xtals, plugs, rack, $475; power supply for SCR-522, $12; converted ARC-4 xceiver for two meters, receiver tunable, xmitter xtal controlled, $45; Sonar SR-9 two meter mobile receiver, $40; Hallicrafter S-38 receiver $29; Krico 25w two meter mobile xmitter, $45; Gonset two meter converter, $29; Collins 1000 vct, 212 mils plate xformer, $22; Hallicrafter S-102 two meter receiver $45; ART-13 xmitter, dynamotor, plug, rack, $525; 115v-24v step down xformer, ideal for 24-28v surplus, CCT52208 ARC xmitter 3-4mc, $7.50; BC-221 original calibration book, $75; shack to house intercom, $12; AN/PDR-8c Navy geiger counter, original cost, $700, sell $150 or trade. Bill Slep, W4FHY, Box 178, Ellenton, Fla.

For further information, check number 49 on page 126.

NON-METALLIC GUY LINE — PERFECT FLEXIBLE INSULATOR — REVOLUTIONIZES HAM RADIO & TV ANTENNA SYSTEMS

Non-inductive, non-conducting, non-absorbing Glas-Line isolates systems from directional arrays, rhombics, etc.

The new main insulator of W3UCT. The Glas-Line is between the two egg insulators running to the lower left. The copper link between the center egg insulator and the upper right egg insulator is for the dead-end feeder of a Zepp antenna.

View of an open thimble and eye bolt for coupling the Glas-Line guy wire to a tree.

GLAS-LINE cannot rot, will not shrink, stretch or sag . . . has high breaking strength of over 500 pounds. Only $2.89 per 100'. Send 50¢ postage. GLAS-LINE IS AVAILABLE AT THE FOLLOWING:

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Ham'n Hi-Fi, Inc., 826 N. Main St., Dayton 5, Ohio
M. N. Duffy & Co., 2040 Grand River Ave., W. Detroit 26, Mich.
Fargo Radio—TV Service Co., 511-515 3rd Ave., N., Fargo, N.D.
Busacker Electronic Equipment Co., Inc., 1216 W. Clay, Houston 19, Texas
Electronic Wholesalers, Inc.
2345 Sherman Ave., N.W. Washington 1, D.C.
Electronic Supply Co., 61 N.E. 9th St., Miami 32, Fla.
413 New Haven Ave., Melbourne, Fla.
Alaska Radio Supply, 307 Seward St., Box 2538, Juneau, Alaska
Henry Radio, 11240 W. Olympic Blvd., P.O. Box 64398, Los Angeles 64, Cal.

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DISTRIBUTOR INQUIRIES INVITED

For further information, check number 50 on page 126.

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Registers Fractions to 99.9 Turns OR roller inductances, INDUCTUNERS, fine tuning gear reducers, vacuum and other multiturn variable condensers. One hole mounting. Handy logging space. Case: 2" x 4". Shaft: ¼" x 3". TC 2 has 2⅛" dial—1⅝" knob. TC 3 has 3" dial—2⅝ knob. Black bakelite.

TC 2 $4.20—TC 3 $4.75—Spinner Handle 75c extra

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FOR SALE [*Cont.*]

DB22A Preselector, $30; Knight VFO, $20. Hazelett, K6PJD, 5322 Ben Ave., No. Hollywood, Calif.

SELL: Plate transformer pri. 117vac sec. 1800vct at 500ma, like new $12.50. Grinnell, W7QJN, 21429 68th W., Edmonds, Wash.

FOR SALE: Carter converter A1080cw, practically new, excellent condition, $40. Stickney, W7BXW, 438 Beverly Hills, Billings, Mont.

HIGH POWER, best offer over $150 takes my 700w, 75 and 40 meter phone, VFO xmitter 1 yr. old, excellent condition. J. Dubovy, W2TCC, Holcomb, N. Y.

SELL xtal frequency standard 7mc 100kc 10kc with xtals and power supply, $20. Antennascope with Triplet 200 microamp meter, $12. Grid dipper QST circuit with power supply, $10. Bedside Ragchewer complete 40-80 meter xmitter receiver same January CQ, $30. Q-multiplier, $6. Millen 10035 dial, $4. Glen, K4OBM, 10923 N. E. 9th Ct., Miami, Fla.

CIVIL DEFENSE SPECIAL: Emerson precision built Commando Combat receiver, new Covers from 5-12 mc and in original combat pack (8" x 10" x 3") with straps and telescoping ant. Paid $40, sell for $29. One pair of newpole climbers and straps, used tool belt and new safety belt, all for $19. Lewis C. Meeks, Box K-57, Salmon, Idaho.

CLOSE-OUT! CQ MOBILE HANDBOOKS, VOL. I. Hard paper cover, list price, $2.00. Of the 46,000 printed, we have only 276 left. To close them out, the first 276 readers sending us $1.00 can have one. (We'll pay postage.) Remember, Vol. I Mobile Handbooks (166 pages of basic data) are entirely different than the current Vol. II edition. They are "collectors items" already and when these are sold, "That's all, OM!" Make check payable to CQ. Send check or $1 to: CQ Circulation Dept., 300 West 43rd St., New York 36, N.Y. Say you want Mobile Handbook, Vol. I.

ALUMINUM TUBING for antenna towers. Sizes 2" through 8" lengths to 30 feet. Write for prices today. PESCO-B, Box 363, Ann Arbor, Michigan.

SPECIAL 10-15 meter vertical dx antenna, only $5 pp. R. E. Saxon, 204 E. North St., Tampa 4, Fla.

FOR SALE: NC-300 Viking Ranger factory wired, MB-26 2 meter trans. BC-654, BC-645. A. Turturro, 146-26 N. Hempstead Tpke., Flushing 55, N.Y.

SALE: Collins 75A-3 receiver, Ranger mitter, DX-100 xmitter, Johnson matchbox, all excellent condition. H. L. Corson, W7YLW, 1308 Wright, Richland, Wash.

PRINTED CIRCUITS: Boards any size resists, etchants, ready to build transmitters, converters, etc., on our pre-etched boards. Printed boards made to your designs. Full information write PRINTED CIRCUITS, 139 N. Locust St., Palmyra, Pa.

CALLBOOKS (fall) $4.50. Rus Sackers, W8DED, Holland, Mich.

CLOSED CIRCUIT TV Camera Kit: Complete with vidicon and 1.9 lens, $395. For details write Jack P. Morgan, W5LQR, P O Box 10561, Dallas 7, Tex.

5KW GENERATOR: 115/230v, single phase, 60cy, brand new, $695. Stephen Grossman, W2YGA, Clinton Corners, N. Y.

FOR SALE: Viking I Johnson TVI kit installed, B&W 52 ohm low pass filter, Dow-key 115 vac coaxial relay, Heath kit VFO, Astatic JT-30 mike. HRO 50T receiver, complete with five coil sets and xtal calib., less speaker. William Giebel, W9IWU, 3539 Green St., Steger, Ill.

DELTA-TENNA ground planes, commercial quality 2 mtr., $19.95; 6 mtr., $24.95; 10mtr., $29.95. Also cut to any commercial frequency 450-20 mc. WESTERN GEAR, Dept. C, 132 W. Colorado, Pasadena, Calif.

ATTN JOBBERS & CLUBS: Imported batteries for sale. Flashlight & Portable Radio "A" batteries, size D, 200 dz. lots—5¼¢ ea.; size C, 200 dz. lots—4½¢ ea.; Portable Radio "B" batteries, 45v, 50 for $1.10 ea., 100 for $1.05 ea., 200 for $1 ea., 500 for 95¢ ea. LALCHAND, Dept. CG, 390 Broadway, New York 13, N.Y.

BARGAINS WITH NEW GUARANTEE: RME-84 $65; HT-20xmtr., $275; Collins 32V3, $495; Collins 32RA8, $69; TBS-50D, $69; APS-50 p.s., $29.50; TBS VFO, $35 Lysco 382 VFO, $19.95; Lysco 600, $69; Eldico TR-75TV, $25; Viking II, $209; Adventurer, $34.50; Knight CW xmtr., $34.95; Gonset #3024 VFO, $45; Sonar SRT-120, $99 Globe Trotter, $29.50; Globe King 275, $199; Globe King 400B, $275; Globe Scout 65A, $69; Scout 65B, $75; Globe King 400C TVIed, $299; HQ-129X, $159. Free trial, terms, write Leo, WØGFQ for best deals. WORLD RADIO LABORATORIES, 3415 West Broadway, Council Bluffs, Iowa.

NEW SURPLUS—SCR274N Command Set plugs 75¢ ea. MC211A right-angled gear drive for Command receivers, 75¢. SCR522 plugs, $1.00 ea. BC348 volume control, $1.95. Conversion manuals, $2.50; schematics 35¢ and 65¢. L. I. RADIO CO., 8309 Lockhead St., Houston 17, Tex.

SCR 522 with tubes, unconverted, good condition, $15. A. R. Koch, W2RMA, Ridge Rd. 7, Schenectady, N.Y.

QSLS

OUTSTANDING QSL, SWL samples 25c (refunded). CALLBOOKS (fall issue) $4.50. "Rus" Sackers, W8DED, P. O. Box 218, Holland, Mich.

QSLS OF DISTINCTION. Three colors and up. 10c brings you samples of distinction. Uncle Fred, Box 86, Meshoppen, Pa.

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DELUXE QSL's. Petty, W2HAZ, Box 27, Trenton, N.J.

QSL SAMPLES. Dime. refundable. Roy Gale, Waterford, Conn.

QSL's—"Brownie" W3CJI, 3110 Lehigh, Allentown, Pa. Samples, 10c, with catalogue, 25c.

QSL's, samples 10c. Gay Krenz, Fall Creek, Wis.

QUALITY QSL's. Samples, 10c. Lee, W5CZA, Box 7171, Oklahoma City, Oklahoma.

CREATIVE QSL & SWL CARDS. Are you proud of your card? If not, let us print your next order. Write for free booklet and samples. Personal attention given to all requests. Bob Wilkins, Jr., Creative Printing, KN6ZMT, P. O. Box 1064B, Atascadero, Calif.

INDIVIDUALLY DESIGNED QSLs. Send your idea, we will return sketches and prices for approval. Also stock samples, dime. St. Louis Amateur Radio Club, Inc., 1123 Washington, St. Louis 1, Mo.

QSLs. Glossy. Samples 10c. W10LU Press, 30 Magoun Ave., Medford, Mass.

QSL's, SWL's, VHF's, XYL-OM's. (Sample assortment approx. 9¾¢) Covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fatabulous, Dx-attracting, prototypal, snazzy, unparagoned, cards. Rogers, KØAAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamourous, pulsating, super-passionate. (Wow!)

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AIRMAILED QSLS! Red-Blue, $2.65. Glossies. Guaranteed. QUICKARDS, Ojai, Calif.

INSTRUCTIONS

INSTRUCTION: General license theory class begins October—Jamaica, L. I., evening. Community Center. Data and applications from Schachet, W2HNG, 135-30 232nd St., Springfield Gardens 13, L. I., N. Y.

CODE COURSE SUPREME, on Magnetic Recording Tape. Results guaranteed. Novice tape, basic instruction, practice material to 8 WPM, $5.95. Advanced tape, practice material 9 to 18 WPM, $4.95. Combined $9.95. 7-inch dual track 3¾ IPS. TAPEDCODE, Box 31-F, Langhorne, Penna.

For further information, check number 51 on page 126.

WANTED

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6 APR-4 ARC-1, ARC-3, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallicrafters, Hammarlund, National, B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc., Write Tom W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel RIchmond 2-0048.

CASH PAID for BC-312, BC-342 revr., BC-610E xmtr., BC-614 sp ampl., BC-939 Ant. tuner, BC-221 freq meter, RA-63 (110vac to 12v 5a) sel. rectifier, JB-70, JB-60 junction boxes. Also, teletype equt. and parts for TG-7, Model 15 printers, perforators, distributors, etc. Also all test equipment. AMBER INDUSTRIAL CORP., 75 Varick St., New York 13, N.Y. CAnal 6-7455.

WANTED: Silver Model 906 Signal Generator in good or better condition. Also four or more Ohmite dummy antenna resistors Model D-100-100. Dick Haskin, W6KEC, 5608 N. Farna Ave., Arcadia, Calif.

WANTED: 6M 12vdc communicator in good condition, also accessories. William H. Calvin, KØEOR, 5306 Mission Rd., Kansas City 3, Kans.

WANTED: Coil sets C-343 & C-344 for BC-AH 229 receiver. W. J. Donaldy, W8LDC, 16065 Glynn Rd., E. Cleveland 12, Ohio.

WANTED: ARC-3, ART-13, ARC-1, BC-348, BC-221, BC-610E and other military surplus and commercial aeronautical equipment. You ship COD, we pay freight. Write, wire, phone. JAMES S. SPIVEY INC., 4908 Hampden Lane, Washington, D.C. Phone: OLiver 6-8608

WANTED: Collins NBFM adapter for 75A2. Radcliff, W8LAH, Box 547, Fostoria, Ohio

WANTED: Automatic telegraphic tape transmission equipment. Perforator, keyer, puller. Write details, price. Huntley, W6RNC, 972 Grizzly Park Blvd., Berkeley 8, Calif.

WANTED: General coverage ham receiver approximately $50 limit. R. Streed, 3344 Beard Ave. N., Minneapolis, Minn.

WANTED: Used receivers and transmitters. Will pay cash or trade. 10% down with up to 24 months to pay. In stock new 75A4's, KWSL's, KWM-1 SSB mobile transceiver, Johnson, B & W, National, WRL Products, Hallicrafters, Elmac, Hammarlund, Gonset, Central Electronics, Mosley, Hy-Gain and Gotham Beams. Write for list of bargains in reconditioned receivers and transmitters with new guarantee. Shipped on approval. Write Ken, WØZCN or Glen, WØZKD for your best deal. KEN-ELS RADIO SUPPLY CO., 428 Central Ave., Ft. Dodge, Iowa.

WANTED: Johnson kilowatt power amplifier. Have exciter. Cash, no trade. C. Herring, 1306 W. 8th St., Plainview, Tex.

WANTED: Donations of parts and/or equipment. Need (1) Novice xmtrs, revrs, parts, (2) portable and stationary low-medium power for communications for missionaries, (3) hi-power equipment for contacting missionary hams. Church sponsored radio club. Will send income tax-valid receipts. Quaker Lane Radio Club, RR #1, Hutsonville, Ill., Marion Shields, pastor, K9BEM.

WANTED: One or two Gordon Roto-Beam rotators with Synchro Anten-A-Cator control box. Must be reasonable and in working order. No junk or defective units wanted. L. K. Rush, Box 1418, Jackson, Tenn.

MISCELLANEOUS

KITS WIRED Expertly: Johnson, Heath etc. Write "Wheelchair Associates" Box 4274, Calistoga, Calif.

RECEIVERS—repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our 21st year. Douglas Instrument Laboratory, 176 Norfolk Avenue, Boston 19, Mass.

READ THE BIBLE: Jesus saves and satisfies. Free folder with message. "Hams for Christ," P O Box 218, Holland, Mich.

SWAP OR SELL

SWAP OR SELL: Clarinet for amateur equipment, what have you. George Lewis, W8GQX, 14332 Birchwood, Cleveland, Ohio.

SWAP OR SELL: DX-20 553A Q-mult., 29 issues popular electronics, key crystals, relay excellent (all) for $125 or trade. Lewis Gould, 159 Cuthbert Rd., Kew Gardens, 15, N. Y.

DX-35 with Heath VFO. Want 750v power supply and 50w modulator or $70. Barry Merrill, K4CSY, Box 588, Kingsport, Tenn.

COLLINS 30K-1 xmtr in excellent condition. Will accept old, quality violin. Owel Barton, 1609 W. 3rd St., Ft. Wayne, Ind.

BUY, SELL, SWAP—Test or Ham equipment. State needs or lowest price and condition. W4FXQ, 5208 Birkenhead Road, Jacksonville, Florida.

RADIO MAGAZINES. Buy, sell, trade. Bob Farmer, Plainview, Texas.

DX [*from page 113*]

ZONE 15: Central zone of Europe.
UQ, UP, UR—Many stations heard and worked. QSL return is GOOD.

ZONE 16: Eastern zone of Europe.
UA1, 2, 3, 4, 6, UB5, UC2, UN1, UO5—Many stations active except UO5. QSL return excellent except UN1 and UO5. (Ed: UO5AA quite active—QSL good.)

ZONE 17: Western Siberian zone of Asia.
UA9, UMB, UJ8, UI8, UL7—Many UA9's active. Rest are scarce but are worked when conditions good. UM8, UJ8 and UH8 worked mostly over long path in early AM and short path late at night. QSL's from UA9's excellent. Rest good except UH8. (Ed: Worked Ahmed UH3KAA about 20 times and still biting nails over QSL)

ZONE 18: Central Siberian zone of Asia.
UAØ–UA9V–UA9Y–
Zone 18 identifications: First letter after UAØ or UAØK is A, B, O, S, or T. Quite a few stations active and can be heard mostly in the AM over short path. (Ed: QSL's good—to me anyway—Most active station UA9KYD)

ZONE 19: (Zone 25, southern half Sakhalin Is.)
Zone 19 identifications: Same as above with letters: C, F, U, K, J, Q and (?) R. Many active stations. Short path in AM's. QSL returns good to poor. (Ed: Most active station UAØKJA)

ZONE 23: Tannu Tuva, UAØKT
No activity at present. Government sponsored expedition may have come off in July as planned. Equipment was all ready but we hear a couple of the planners were temporarily suspended. Call UAØKTT.

The letter "K" following the prefix and number denotes a Collective (Club) station at the disposal, in most cases, of many operators. Russian North Pole stations use call signs UPOL1, UPOL2 etc. and seem to be permitted to contact all amateurs. Russian South Pole station bears the call UA1KAE. Most Russians are excellent operators and have a fairly good understanding of English. Some UAØ stations have little knowledge of English however and QSO's are of the rubber stamp variety. 90% of the UA stations use cw.

(Ed: Much improvement could be made in the average QRI and VFO drift in Soviet signals.)

Russian Licensing (W2DGW)

Third Class License, somewhat equivalent to U. S. Novice, allows use of 10 watts maximum power, cw, on 1.7 and 3.5 Mcs.

Second Class License allows a maximum of 40 watts on 1.7, 3.5, 7 and 14 mcs only. Code requirement is 18 WPM and theory test is easy.

First Class License entitles holder to a maximum of 400 watts on all ham bands and calls for 20 WPM. Theory exam is stiff. Other bands open to first class are: 38/40, 144/146, 420/425, 1470/152 and 5650/5950 mc.

Last Minute Items

W2EQS reports that he will be on from FP8-land the middle two weeks of September. He will be accompanied by W2HTI and W2NLQ. The Governor has OK'd his operation but call has not been assigned as yet. Sideband and cw will be used on all bands 28 thru 1.8 mc. . . . We nailed FP8AA on July 23rd for his 930th QSO. Jack, K2CPR, was trying to reach 1000 before going QRT the next day. A "first" occurred when a FP8AA/W2EQS was made on 160 . . . Those awaiting QSL's from XW8AB will be pleased to know that Marcel has caught up with all of them and shipped them out in July. Also from Laos: XW8AB is active again on 7, 14, 21 and 28 mc. XW8AC is on 21, A3. XW8AG is active on 14, 21 and 28 (Good cw op and says QSL Box 165, Vientaine). XW8AG advises that Castry, XW8AE, will soon be active . . . VK9JF has been worked on 14072 at 1130 GMT. He is on Cocos and is VK9AJ's relief. . . . Carl, W1BFT, has 358 prefixes worked towards WPX with 188 confirmed. . . . OK1MB says DX'pedition to Albania, due early August, has been delayed due to transit problems thru YU but it will go through a little later even if they have to go on plane via Moscow! . . . WØDSP worked Zudah, ZG1AE, who says ZG is new call for Ghana. Another report said it should be "2G1AE". We'll see . . . VS9AG has been laid up with Asiatic flu. W2ZGB has his logs for the period February 26th to May 5th which include about 50 W/K contacts . . .

W3MSK/VE4 was due to return home in mid-August. . . CN8FY (Robert Witt, AACS Xmtr Site, Sidi Slimane Air Base, Morocco) will be active until late November and then head home to K4ESI. Bob is on 14 and 21 mc, AM, daily from 1900 to 2400 GMT. . . A new French prefix, F2, will be reserved for use in Corsica, F2CA etc. . . Ray, VR3A, will be on the air again from Fanning Island for another two years starting in October. Phone and cw. . . ZC3AC is off the air due to blown receiver. W8PQQ is raising funds to equip him with another one to be sent by VS2DB. Only 80 bucks needed. . . VK9AD is active from Norfolk Island. . . QTH: VK9VM, Box 300, Rabaul, New Guinea (Tks W6GMF) . . . Rundy, W3ZA, now is stateside but returns to Viet-Nam in early September. He will take gear with him and hopes to receive OK to put XV on the air . . . Tun, XZ2TH, was heard, 14093, 1200 GMT, very chirpy signal. . . G3ANK is now VK3AKQ. . . W6VX nabbed VQ9HAY on sked. . . VR3E is now home and may be reached a 115 Osborne Road, Forest Gate, London, E7. . . Mac, W4DNU, and Bill, K2GNY, plan DX'pedition in January or February. Spot is not yet selected. If any suggestions you might contact W4DNU/KH6 as follows: P. G. "Mac" Roemer, Staff Allowance, FAW-,2, Base Radio, USNAS, Navy 14, FPO, San Francisco. . . We wish to take this opportunity to thank all for their very generous contributions towards Danny and YASME II. By the time this is read I think it is safe to say that he will be "over the top" fund-wise. All ham gear will be furnished by Hallicrafters to give Danny a KW on SSB and cw. Danny will attend the National Convention in Chicago, August 29th-September 1st and then fly to England to purchase a boat and thus take advantage of the low prices in G-land. Barring delays he should sail again, England to KV4, in October. . . As we write, Danny is QRX for permission to get on the air from VP2VB.

Here and There

KV4AA was happy to log visits from K2BWQ, W4HQZ, W4AQC, W2EKD and W2BPU. . . KZ5IF is now WØMVH after two years in the Canal Zone. . . G3ANK now resides in VK3-land. . . W1CJL is now SSB'ing as K6VMA. . . Dick, W1UGW, moves from Vt. to N. J. where he will live when leaving Army in November. . . Otto, YO3FT, is on daily at 0400 GMT, 14040, looking for R. I., Mont., and Nev. . . Latest ham addition to the Mayer family is son Bob who signs KN4PUJ in Arlington, Va. Pop is KP4KD and brother KP4BJ. . . Nick, W1UBW/VE8, wants it known that QSL's are on order and should be all received as this is read. He will be signing /VO2 or /KL7 in September. . .

73, Dick, KV4AA

CQ Ad Index

Reader Service

CQ Magazine
300 West 43rd Street
New York 36, New York

Reader Service Coupon I
Void after Sept. 25, 1957

Please send me information on your ads in the September 1957 CQ keyed as follows:

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33
34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55

Name_____ Call_____
(Please Print)

Address_____

City_____ Zone_____ State_____

BARRY'S LATE SUMMER CLOSE-OUT SALE!

RCA GEIGER COUNTERS

at up to 75% off regular net

All units are supplied with radioactive test sample, AEC booklet "Prospecting With A Counter" and Operating instructions. Packed in original factory sealed cartons, less standard radio type batteries easily obtained in any locality.

MODEL WF-10A. Lightweight, compact, portable instrument ideal for the amateur prospector. As simple to operate as a portable radio. Indicates three ways: by meter, by neon light and by headphones. Has handy reset button. Aluminum housing is easily decontaminated by wiping with a damp cloth. Has three counting rings: 0-100; 0-1000; 0-10,000. C.P.M. Uses 1B85 counter tube. Measures 7¾" x 8½" x 3½". Weighs only 5 lbs. Supplied complete with all tubes, headphone & carrying strap. (Regular net $119.50)
Our special price only..... **$29.95**

MODEL WF-12A. Similar to model WF-10A above but with added features. Includes an external probe for convenience in probing in fissures and in test bores. Sensitive enough for use by professionals, yet modest enough in price for use by amateurs. Uses 1B85 counter tube. Supplied complete with all tubes, probe, headphone and carrying strap.
(Regular net price $149.50). Our special price only... **$33.95**

MODEL WF-11A. This model uses an extra sensitive bismuth-type 6306 Geiger-counter tube. Housed in a weather proof aluminum case that is easily decontaminated by wiping with a damp cloth. This compact, dependable, portable unit registers in three ways, by meter, by neon bulb, and by headphone. Equipped with a handy reset button. Supplied complete with all tubes, headphone and carrying strap.
(Regular net price $154.50). Our special price only..... **$37.95**

MODEL WF-14A. Similar to model WF-11A but with extra sensitive Bismuth type 6306 counter tube fitted into external probe for greater prospecting versatility. Has three counting ranges: 0-200, 0-2000, and 0-20,000. Complete with all accessories plus external probe.
(Regular net price $186.00) Our special price only... **$39.95**

MODEL WF-15A. Super-sensitive portable radiation detection instrument for use in schools, industry, medical laboratories and other locations where a completely professional unit is required. This model contains a bank of ten Geiger-counter tubes type 1B85 giving the instrument increased sensitivity over its three ranges: 0-1,000, 0-10,000, and 0-100,000. Special features include background radiation compensating control, built-in battery checker, two step switch for "fast" or "slow" meter indication, connector for addition of external probe, and rapid zero reset button. Supplied complete with all tubes, headphone, and leather carrying case. (Regular net price $475.00). Our special price only..... **$99.95**

MODEL WF-16A. This is the most sensitive of the entire line. Uses a bank of ten Bismuth type 6306 center tubes and measures up to 200,000 counts per minute in three ranges: 0-2,000, 0-20,000, and 0-200,000. Indispensable for the professional prospector. Includes all features found in model WF-15A. Measures 11"x5"x7½" and weighs only 8 lbs. Supplied complete with all tubes, headphone, and top-grain leather case. (Regular net price $750.00).
Our special price only..... **$149.95**

SPECIAL PURCHASE!
XMTG VARIABLE CAPACITORS

Brand new surplus high and medium power variable capacitors made to rigid quality specifications by Johnson and Cardwell. Priced at up to 70% off regular net. Many are in original overseas packing. All guaranteed perfect. Quantities are limited so order now while they are available at these extra low prices.

SINGLE SECTION

Mmfd.	No. of Plates	Air Gap	Shaft Dia.	Net Ea.
375	37	.350	⅜"	$5.95
150	19	.5	¼"	6.50
100	23	.045	¼"	.98¢

DUAL SECTION

(Not split stator—2 sections)

*300	29	.175	¼"	$7.95

DUAL SPLIT STATOR

(values given are for each section)

600	72	.080	¼"	$7.95
*300	21	.125	¼"	4.95
200	21	.350	⅜"	8.95

4 SECTIONS — COMMON STATOR

150-50-50-150 MMFDS. 17 plates per 150 mmfd. section. 7 plates per 50 mmfd. section. Air gap .125 ¼" shaft.
NET EACH..... **$4.95**
(*Fitted with removable worm gear drive)

0-200 MICROAMMETER

3" round in flush panel mounting. Made by Marion Instrument Co. (Regular net price $9.50). All are new and guaranteed. Packed in original boxes.
Our special price only..... **$4.95**

HIGH VOLTAGE OIL CAPACITOR

2 Mfd. at 6,000 volts DC. Made by Sangamo. Supplied complete with sturdy metal mounting brackets. Grey enamel finish. White porcelain stand-off insulators.
Brand new. SPECIAL..... **$19.50**

SPECIAL 28 VOLT XFMR.

115 volts @ 60 cycles PRIMARY. 28 volts @ 10 amps SECONDARY. Perfect for operation of beams and military surplus equipment. Measures 4¼" wide x 4" long x 4" high. Weighs 11½ lbs. (Shpg. wgt. 13 lbs. Worth much more than our low price of **$4.50**
(3 for $12.00) (10 for $37.50) (FOB NYC)

W.E. ANTENNA COUPLER

May be used on either balanced or unbalanced lines. Consists of a variable inductor, a split stator capacitor, two 0-1.5 R.F. Amps (thermocoupled) 3" panel meters. All housed in a metal cabinet 13¼" high x 9¼" wide x 4¾" deep. Front panel is tastefully etched and chrome plated. Cabinet is finished in blue-grey baked enamel and fitted with key-slot type mounting holes. Made by Western Electric for professional use in commercial stations. Adjustments provided for both balancing and tuning. All units are brand new and in top condition. Model 100-B Coupling Unit.
BARGAIN PRICED!..... **$14.95**

SHALLCROSS KILOVOLTMETER

Brand new, portable DC model with 0-5, 0-10, and 0-20 KV ranges. Features reverse polarity switch; external metering binding posts; metering switch for internal and external measuring; 4½" squaremeter; and built into a sturdy industrial oak carrying case that is worth as much as we are asking for the entire instrument. Uses precision resistances throughout, steatite insulation and best grade engraved bakelite panel. Measures 18⅜" x 10½" x 9¾". Accurate to within 2%. Ruggedly built for use in field or laboratory. (Regular price about $255)
OUR SPECIAL PRICE ONLY..... **$37.50**

TERMS: 25% deposit with order. Balance COD. All merchandise guaranteed. FOB, NYC. Prices subject to variation. Stock subject to depletion.

BARRY ELECTRONICS CORPORATION
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September is

SSB BONUS* month at ALLIED

Outstanding SSB Gear Ready for Immediate Shipment From Stock

TRANSMITTERS

Collins KWM-1
Collins KWS-1
Hallicrafters HT-32
Hallicrafters HT-33
Johnson 500
Johnson Pacemaker
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Central 20-A
Central 100V
Central 600L
Lakeshore Phasemaster
Lakeshore P-400 GG Amplifier

RECEIVERS

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Hallicrafters SX-101
Hallicrafters SX-100
National NC-109
Hammarlund HQ-110 with HC-10
RME 4350 with 4301

Join the Swing to SSB—It's Easy at Allied!
Get the Deal of a Lifetime in September

*

10% *more for you*

BONUS TRADE-IN ALLOWANCE

When you trade with ALLIED for SSB equipment in September, we'll give you a whopping 10% MORE than our regular high trade-in allowance for your old ham gear. You'll not only get our regular liberal allowance, but we'll add a big EXTRA 10% to help you get that SSB rig you want. Remember—you get that 10% bonus at ALLIED—during September only. Our usual liberal time payment terms still apply—only 10% down, up to 18 months to pay.

Select your new equipment now from the ALLIED 1958 Catalog—just off the press. It's packed with *everything* in Ham gear, including many new SSB units.

free!

NEW! 1958 ALLIED 404-PAGE CATALOG

You'll want this most widely used Electronic Supply Guide—get it and keep it handy. Features the largest selections of quality station gear—it's your complete buying guide to everything in Electronics: Hi-Fi, recorders, P.A., test instruments, build-your-own Allied KNIGHT-KITS, industrial equipment, tubes, parts, tools and books. Write for your Free copy of the 1958 ALLIED Catalog today.

ALLIED RADIO

Serving the Amateur for 37 Years

100 N. Western Ave., Chicago 80, Ill.

For further information, check number 55 on page 126.

NC-66 is shown with RDF-66 Direction Finder Accessory

PORTABLE RECEIVER

for home and away—indoors and outdoors

NC-66

ORLD'S MOST VERSATILE RECEIVER! . . . a ham ceiver, a 3-way portable, a marine receiver, and SWL receiver.

or home and away—indoors and out.

ational's new NC-66 offers you AC/DC-battery peration, five-band coverage from 150 kc to mc, electrical bandspread with logging scale, us a fixed-tuned CW oscillator. Housed in a andsome, rugged metal cabinet with a carrying andle, National quality is evident throughout his great new portable. You'll find it attractively nctional with a long "Full-Vue" slide rule dial, quality 5" PM speaker, *and* a phone jack. It also as *two* antennas: whip and loop stick.

or boat owners a special marine band from 150 kc 400 kc covers maritime DF beacon service. And, course, CD positions are clearly marked.

FEATURES:

- ★ Continuous coverage of DF beacons, AM broadcast, amateur and world-wide shortwave bands. 150-400 kc, .5 to 23 mc.
- ★ Operates on 115 volt AC or DC or self-contained batteries, or 220 volt AC with accessory adaptor.
- ★ Full electrical bandspread.
- ★ Provisions for external direction finder for marine use.
- ★ Salt spray tested.
- ★ Built-in ferrite loop antenna for DF and BC bands.
- ★ Built-in whip antenna for shortwave bands.
- ★ Receives voice or code. Has CW oscillator; and provision for phones.
- ★ "Full-Vue" slide-rule dial with easy-to-read scale. Amateur and principal shortwave bands as well as CD positions clearly marked.
- ★ Logging scale provided.
- ★ Complete with built in speaker.
- ★ Separate switch for stand-by operation.
- ★ Handsome, modern styling: two-tone metal cabinet, chrome trim, with carrying handle, and enclosed back.

*BAND	COVERAGE
DF	150-400 KC
BC	.50-1.4 MC
1	1.40-4.05 MC
2	4.0-11.4 MC
3	11.0-23 MC

TUNING SYSTEM: Separate general coverage and bandspread tuning capacitors connected in parallel on all bands. Three gang capacitors tune antenna, RF and oscillator circuits. Bandspread knob can be used as a vernier on all frequencies.

AUDIO SYSTEM: Two-stage audio amplifier with 3V4 output tube. Has speaker and phone output jack.

CONTROLS: Main tuning; bandspread; volume control; band selector switch; AM-CW switch; stand-by-off — receive switch.

TUBE COMPLEMENT:

RF	1U4	Audio output	3V4
Converter	1L6	Rectifier	Selenium
CW on-IF Amp.	1U4		
2d Det. — AVC — 1st audio	1U5		

OTHER SPECIFICATIONS:

Antenna input: 50-300 ohms, unbalanced.
Size: 12-5/16" wide x 9-11/16" high x 10" deep (overall).
Finish: two-tone gray.
Shipping weight: 16 lbs. less batteries.
Optional accessories: RDF-66 Loop, 220V. adaptor.

Only $12.95* down
Up to 20 months to pay at most Receiver Distributors.
*Suggested Price: $129.95**
RDF-66 Direction Finder Accessory available at additional cost
**Prices slightly higher west of Rockies and outside U.S.A.

NC-66

Eight out of 10 U.S. Navy ships use National receivers

For further information, check number 2 on page 126.

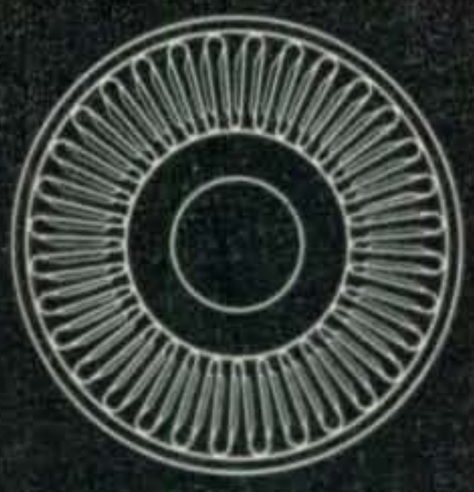
SINCE 1914 **National** NC® **COMPANY, INC., Malden 48, Mass.**

tuned to tomorrow

500 WATTS INPUT

NEW
RCA-7034/4X150A
SHOWN ACTUAL SIZE

- Can take 500 watts CW or SSB—in new transmitters.
- Operates with higher margin of safety and longer life—directly replaces 4X150A in present transmitters.
- Useful up to 500 Mc at reduced ratings.



Key to High Power
New, high-efficiency radiator is hard soldered directly to plate for increased heat transfer.

New RCA-7034/4X150A Beam Power Tube uses new high-efficiency radiator to handle higher powe

This is it—for its size, the most powerful RCA beam power tube suitable for amateur service. Plate dissipation rating is 100 watts higher than for the 4X150A. Plate input power of 500 watts can be used in CW and SSB operation—at frequencies as high as 150 Mc.

Small as golf balls, two RCA-7034/4X150A's are the answer for compact, all-band finals handling inputs up to the legal limit. And note this fact: RCA-7034 can be used to replace type 4X150A in your present transmitter to give longer life. *No circuit changes needed!*

RCA-7034's are now available from your RCA Tube Distributor. Tube technical data is available from RCA, Commercial Engineering, Section I-15-M, Harrison, N. J.

For further information, check number 3 on page 126.

RCA-7034/4X150A
Typical CW Operating Conditions
(up to 150 Mc)

DC Plate Voltage	1500	2000	Volts
DC Screen Voltage	250	250	Volts
DC Grid Bias	−88	−88	Volts
DC Plate Current	250	250	Ma
DC Screen Current (approx.)	24	24	Ma
Driving Power	1.5	2.5	Watts
Power Output (approx.)	260	370	Watts

RCA®
TUBES FOR AMATEURS
RADIO CORPORATION OF AMERICA
Electron Tube Division Harrison, N. J.